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ABSTRACT

This study was initiated by the Newfoundland Public Library Services (NPLS) to assess the feasibility of automation for the library services and to determine the viability of an integrated automated library system for the NPLS. The study addresses the needs of NPLS in terms of library automation; benefits to be achieved through the introduction of automation; automation requirements and costs; cost of automating in relation to potential cost savings; staffing requirements for automation; and a recommended approach to automation. The report focuses on the following areas: (1) needs analysis (headquarters, technical services department, provincial reference and resource library, St. John's City (Newfoundland, Canada) libraries, regional libraries, books-by-mail); (2) functional requirements for the application software; (3) system options (technical requirements, software options, microcomputer equipment, estimated costs); (4) database creation and management (existing machine-readable records, options for catalogue maintenance with the integrated library systems, issues affecting the decision, estimated costs); (5) management of an automated library system (staffing, training, estimated costs); (6) the costs and benefits of library automation (quality of service to NPLS clientele, networking, efficiency, accuracy and timeliness of library routines, management information, cost-benefit analysis); and (7) a system development strategy and implementation plan. Conclusions and recommendations are provided in addition to tables and appendices related to the topical issues addressed in this report. (MAB)

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ED330334

NEWFOUNDLAND PUBLIC LIBRARY SERVICES

FEASIBILITY STUDY FOR AN AUTOMATED LIBRARY SYSTEM

FINAL REPORT

U.S. DEPARTMENT OF EDUCATION
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Prepared by

Beaumont and Associates Inc.,
Library and Information Systems Consultants

September 30, 1989

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NEWFOUNDLAND PUBLIC LIBRARY SERVICES
FEASIBILITY STUDY
FOR AN
AUTOMATED LIBRARY SYSTEM

Prepared by
Beaumont and Associates Inc.
Library and Information Systems Consultants
September 1989

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EXECUTIVE SUMMARY

Introduction

This study was initiated by the Director, Newfoundland Public Library Services (NPLS) to assess the feasibility of automation for the library services. In the process we have determined:

- o the needs of NPLS in terms of library automation;
- o benefits of introducing automation, including potential cost savings, and service benefits and efficiencies that will result;
- o automation, staffing, and training requirements and estimated costs.

The goal of NPLS is to improve and expand services through automation by:

- o providing information more efficiently and improving the quality of services to patrons;
- o providing new services based on integrated online resources;
- o improving the efficiency and effectiveness of existing staff and reducing the duplication of effort that is required in the present environment;
- o developing useful management tools to support decision making.

Review of current operations

The first phase of the study reviewed all aspects of current operations in St. John's, including the St. John's City Libraries (SJCL), the Provincial Reference and Resource Library (PRRL), the Technical Services Department, and Headquarters operations. We also visited 3 regions, and the Books-by-mail service. This assessment was essential to understand current operations and the problems that might be solved by additional automation.

During the current 5-year plan, 1985-1990, NPLS has made progress in the areas of staffing and service development. However, the hoped-for investment in library automation to improve access to the collections has been lacking. As a result, the full value of the investment in Utlas is not being realised in terms of equalised access to the collections, and SJCL is losing control of its collection because the circulation system is totally inadequate for the volume.

Our overall impression was of a dedicated and enthusiastic team of librarians and staff who are providing the best service possible with tools that are outdated and that limit their potential to provide service. Current services are limited by the lack of:

- o easily accessible information about on-order, in-process and newly catalogued titles;
- o equipment to take advantage of cost-effective micro-based office automation;
- o effective collection control in SJCL which has the circulation volume to take advantage of current library automation technology.

There is no doubt in our minds that NPLS should select and implement an automated library collection management system that will support current services more efficiently and cost-effectively while also providing opportunities for the development of new services and products.

We made a number of recommendations that suggest minor changes to present operations to improve efficiency and communications:

Recommendation #1: That software and training be obtained as soon as possible to support spreadsheet applications and a simple database management system.

Recommendation #2: That Xenix training be provided for at least one person in the Business Office so that the group is less reliant on outside consulting support.

Recommendation #3: That the option to form a local user group of offices using the same payroll and G/L software be explored, and that the group or NPLS independently contract with a local technician for software support.

Recommendation #4: That NPLS acquire a microcomputer, with a 20Mb or 30Mb hard disk for running MS/DOS applications such as spreadsheets, the fixed asset inventory and word processing. The options for attaching this microcomputer to the Xenix machine and/or transferring data between systems should be explored but is not essential for the first applications.

Recommendation #5: That NPLS maintain Utlas services until an overall automation plan is in place and approved. In the meantime the use of CD-CATSS to reduce online charges and/or facilitate additional retrospective conversion activities should be considered.

Recommendation #6: That priority be placed on completing the conversion of the PRRL catalogue records as their availability in the COM catalogue is beneficial to all service points in NPLS.

Recommendation #7: That steps be taken to ensure that the existing records for the Newfoundland Newspaper Index are securely duplicated and stored at NLCS until the feasibility of converting the records to a new system has been assessed.

Recommendation #8: That in the initial stages of the automation plan, the PRRL be provided with microcomputer software to manage ILL requests, office automation software, a modem for Envoy communications, and appropriate training.

Recommendation #9: That in the initial stages of the automation plan each regional office be provided with a microcomputer, office automation software, a modem for Envoy communications, and appropriate training.

Recommendation #10: That the Business Office be provided with its own Envoy mailbox (ADMIN.BO), training in the use of Envoy, and a modem on the proposed additional microcomputer for direct access to its mailbox.

Recommendation #11: That the option to develop a simple microcomputer-based tracking system for rotating collections be investigated.

Recommendation #12: That Books-by-mail workflow and staff scheduling be revised so that the Ocelot system could be run as a single-user application on the existing microcomputer.

Requirements for automation

In order to assess the feasibility and cost of automation we worked with the Automation Steering Committee to define the functions that the library system would have to support to meet the needs of NPLS. These requirements are listed in Appendix I. The distribution of automated library functions in NPLS would be as follows:

Technical Services - Acquisitions/order management, cataloguing

PRRL - Periodicals control, circulation and inventory, inter-library loans, public online catalogue

SJCL - Periodicals control, circulation and inventory, media booking, inter-library loans, public online catalogue

Regional headquarters and resource libraries - Online catalogue access on an as-needed basis

Chapter 4 describes the hardware, software and network options suitable for NPLS. Costs were obtained by issuing a Request for Quotation and contacting local vendors of microcomputer equipment. These costs are summarized in Table 5.

Database creation and management

Since 1981 NPLS has maintained the union catalogue on Utlas using the CATSS online cataloguing system. All significant materials purchased since 1981 have been included in the catalogue with detailed information about which branches hold each title. From this information NPLS generates a microfiche union catalogue on a regular basis and provides every service point in the system with a full union catalogue. Although the COM catalogues are not as current as library staff might like, this is a considerable achievement which should be the envy of most other provincial public library services. These records will form the catalogue database to support NPLS automation requirements.

Recommendation #13: That NPLS investigate as soon as possible the use of CD-CATSS with Utlas as an alternative to online use of CATSS with a view to saving some online costs before purchasing an integrated library system.

Recommendation #14: That in the longer term the NPLS union catalogue should be maintained on an in-house integrated library system with records derived from CD-CATSS and Utlas CATSS. The COM catalogue for branches should be produced by a third party from the in-house system and a presence should be maintained on Utlas for ILL purposes.

Staffing and training

Acquiring technology is relatively easy. It is the managing, motivation, and training of the people involved that is critical and more challenging. Apart from the Technical Services staff who use Utlas, NPLS staff have had very little exposure to library automation or microcomputers. A commitment to staffing and training will be critical in the introduction of the integrated library system and of microcomputers for office automation. Staff and management at NPLS are eager to improve their efficiency and services through automation, and we do not anticipate serious resistance. But proper staff support and training must be provided.

Recommendation #15: That the position of automation coordinator be funded in the next financial year and filled as soon as possible in order to implement the proposed plan.

Bringing database maintenance in-house will result in much reduced Utlas costs and save staff time. Two terminal operator positions and 1/2 a catalogue position could be eliminated by attrition or re-deployment to other areas.

Recommendation #16: That the database management requirements be assessed by NPLS management and overall responsibility be assigned to the Head, Technical Services, with a member of the cataloguing department responsible for day-to-day procedures.

Recommendation #17: That high priority be placed on finding local training resources for microcomputer applications and that training in general be adequately supported to ensure successful implementation of the automated library system.

Costs and benefits of automation

In the course of the study we identified benefits of further automation in several areas of NPLS operations:

Quality of service to NPLS clientele

Regional headquarters and resource libraries

Although automation benefits will be most evident to patrons in libraries that have online circulation and public catalogues there will be benefits to patrons across the province:

- regional staff will have online access to current information in the union catalogue to deal with urgent requests;
- updates and changes to the catalogue will be dealt with more efficiently;
- automatic production of new book lists for distribution to branches and patrons can be generated from the online bibliographic database;
- circulation status for materials in the PRRL and SJCL will be available online;
- Inter-library loan will be supported online; and
- the frequency of the fiche catalogue can be increased because of reduced production costs.

NPLS branch libraries

Automation will be least visible to the branch libraries throughout the province. However, these are the front lines of service to patrons, and improved support from Headquarters and the Regional Headquarters will be evident in faster response to ILL requests, the ability to generate special and custom bibliographies for patrons who need them, more current catalogues, and improved control of rotating collections.

PRRL and SJCL

The automated library system will improve the quality of service to users and provide many services that are not currently available. For example:

- after circulation is implemented, the ability to accept and process renewal requests, with or without the book in hand, and by telephone;
- the ability to provide patrons with the exact status of all items on loan to them, or to a member of their family, at any time;
- online access to a union catalogue of the entire library collections for patrons and staff, providing different and improved ways of approaching the collection;
- adult/juvenile catalogues accessible from any service point in the library system;
- the capability for staff and patrons to select and print bibliographies based on the libraries' holdings;

- access to cassettes, records and other special media online, and the ability to maintain and distribute special lists;

- improved reserves service with less time spent searching the shelves to retrieve reserves and easily identified missing books;

- improved reserves service from the branches - staff will be able to place reserves directly on any books in the PRRL and SJCL and inform the patron of its status;

- accurate, informative overdue notices;

- the ability to provide patrons with the circulation status of all items not on the shelves at the time of inquiry;

- the same services and information from all circulation desks;

- the introduction of juveniles to library technology that is commonplace in universities and other information service centres; and

- the enhancement of community computer literacy.

In addition to the direct service improvements for patrons, there are benefits for the library as a community service. Automation would provide equalized service points in the city. Information will be more readily available at each branch. Within the provincial library system and Newfoundland as a whole, PRRL and SJCL will maintain their presence as resource libraries in an increasingly automated environment and will be in a position to contribute to, and gain from, networking activities in the future.

Networking

Expansion of the online union catalogue and its control in-house will provide an important resource to position NPLS in the community of automated and networking libraries. The availability of the catalogue in an industry standard format, MARC, means that NPLS records can continue to be contributed to a national union catalogue for inter-library loan purposes and also merged with other Newfoundland library catalogues for the production of provincial catalogues. For example the MUN Newfoundland collection records could be merged with PRRL records for a specialized catalogue.

Through provincial or Datapac networks anyone with a communicating terminal or workstation could access the union catalogue, regardless of location. NPLS could cooperate with the Newfoundland and Labrador Development Corporation (NLDC) in this area since it might be most applicable to business needs.

Efficiency, accuracy and timeliness of library routines

General efficiency, accuracy and timeliness of library routines will be greatly improved. Some routines at NPLS are error prone because the information is not conveniently stored.

Implementation of an automated system shortens and simplifies procedures and provides more accurate and informative notices to the patrons. Other examples include:

Technical Services

- the status of on-order items will be readily available online;

- regions will be able to deliver orders and catalogue changes by electronic mail for integration into the online system, thereby eliminating repetitive typing and sorting and reducing opportunities for error;

- availability of 'on order' information and status of an item from a single source resulting in some definable savings in terms of rationalizing collection development. This also improves the efficiency and accuracy of the acquisitions process by creating as soon as the item is ordered an online record which can be upgraded to a full catalogue record when the item is received;

- management of a complex fund accounting system through the automated acquisitions module will reduce time spent on budget management and provide up-to-the-minute reports on the status of all materials budgets for the regions as required;

- preparation of catalogue information will be directly online and immediately available throughout the library system;

- changes and additions to catalogue information will be immediately available online and regional librarians should be able to communicate these changes to Technical Services by electronic mail;

- fiche production from the in-house file will result in savings over the present Utlas costs;

- shelf listings by branch will be available for any location in NPLS so that inventory can be regularly performed at the libraries. At present there are no shelf-lists for the libraries and it is impossible to do any inventory.

PRRL and SJCL

- periodicals and government documents control can be automated and current holdings will be available at any service point;

- bibliographies and lists can be produced in response to reference questions in a timely and efficient manner;

- access to the catalogue and to electronic mail services can be integrated in a single workstation, resulting in more efficient workflow for the ILL librarian and assistant;

- reserves can be managed at PRRL and SJCL by recording the request alongside the loan transaction in the system and relying on the system to alert the operator that a returning item is required by another reader;

- overdue notices can be produced for PRRL and SJCL loans;

- fines accounts can be maintained against patrons so that if an overdue book is checked in when the patron is not at the library, the fine can be collected at a later date; and

- an integrated patron file for SJCL can be maintained on a regular basis and will be accessible from all service points and branches. A new online patron file will be an accurate and comprehensive reflection of community use of the library.

Automation in libraries is generally seen as job enrichment for persons whose tasks are primarily clerical. Routine tasks are done more efficiently and accurately and staff gain skills that are marketable in today's office environment.

Management information

The present manual environment does not provide easily accessible and useful management statistics in terms of collection profile and use. Nor does it facilitate any analysis of the users of NPLS. The integrated library system will provide meaningful management information to assist in the planning and decision making involved in running a library, e.g. collection development, staff utilization, patron use and the development of performance measures for the library. Microcomputers at the regional and administrative offices will simplify the collection and maintenance of branch statistics and enable Headquarters to merge and manipulate regional information more effectively.

Table 8, which shows the five-year cost-benefit analysis of automation at NPLS, indicates that there are considerable savings to be gained by automation in addition to the intangible benefits described above.

The report concludes with a system development plan that phases automation over 4-5 years to match the funding suggested in the cost-benefit analysis.

Our final recommendations, which summarize the issues raised throughout this report, are as follows:

Recommendation #18: That the NPLS Board approve in principle the proposed implementation plan for library automation and authorize commencement of the budget process.

Recommendation #19: That St. John's City Library Board support the overall plan for NPLS library automation and that SJCL have priority in the implementation of circulation at all service points.

The decision to automate must be based on a number of factors:

- o availability of a system or systems that can meet NPLS needs;
- o the benefits to be gained from automation, such as increased service levels, resource sharing opportunities, and the increased efficiency and effectiveness of library management and staff; and
- o the availability of funds.

New technologies are constantly evolving and the Request for Proposal (RFP) issued by NPLS should be structured to show the whole automation strategy, i.e. library functions, microcomputer activities, networking, etc., so that vendors have an opportunity to propose creative and complete solutions.

With the completion of this study NPLS is in a position to proceed with obtaining resources and preparing to select the necessary automated systems. Real benefits will be gained quite quickly and increase rapidly as NPLS accumulates experience and is better able to exploit the considerable investment that has already been made in collection-building and the Utlas based union catalogue. To supplement its own collection NPLS will also remain in the growing community of automated libraries that are able to share resources and provide more effective services.

1. Introduction

This study was initiated by the Director, Newfoundland Public Library Services (NPLS), to assess the feasibility of automation for the library services. Its purpose is to determine the viability of an integrated automated library system for the NPLS. The study addresses the following:

- The needs of NPLS in terms of library automation;
- Benefits to be achieved through the introduction of automation;
- Automation requirements and costs;
- Cost of automating in relation to potential cost savings;
- Staffing requirements for automation;
- Recommended approach to automation.

The goal of NPLS is to improve and expand services by:

- providing information more efficiently and improving the quality of services to patrons;
- providing new services based on integrated online resources;
- improving the efficiency and effectiveness of existing staff through appropriate automation and reduction of duplication of effort;
- developing useful management tools to support decision making.

The first phase of the study reviewed all aspects of current operations in St. John's, including the St. John's City Libraries, the Provincial Reference and Resource Library, the Technical Services Department, and Headquarters operations. We also visited 3 regions, and the Books-by-mail service. The following chapter summarizes this review and highlights the issues related to further automation.

2. Needs analysis

The purpose of this phase of the study was to gain an understanding of the operations of NPLS by examining the information being managed, the processes and products of library activities, and to gather statistics on the volumes of transactions in the various departments of the library services. We also hoped to identify problem areas which might be alleviated by automation or a change in manual procedures.

By examining current operations it is possible to identify the tasks and functions that an automated system must support to meet the needs of the Library Services.

This chapter contains some recommendations relating to administration and current procedures. Recommendations relating to the overall automation strategy are in the final chapter of the report. All recommendations are repeated in the Executive Summary.

2.1. Headquarters

2.1.1. Business and Administration Offices

The Business Office has automated payroll, the general ledger and accounts payable in the past 2 years. The software to support these functions was implemented by Thorne, Ernst and Whinney (TEW) of St. John's. The equipment in use consists of an IBM-PC/AT with Xenix operating system and 2 terminals.

Automation issues

- Use of spreadsheet software

  There is an immediate need in the Business Office for additional microcomputer software. In particular the manager and staff maintain a number of complex tables for group insurance reporting and tracking which should be transferred to spreadsheet software as soon as possible since they involve tracking 5 insurance programs for over 300 people. Listings are required from the spreadsheet for reporting to the insurance companies and to transfer information about premiums to the payroll system.

  To provide a link between the payroll system and spreadsheets it will be essential to incorporate the payroll number in the spreadsheets. Transferring data to the payroll system will depend on whether machine-readable files can be imported into the payroll system. Even if this is not possible, maintaining the information in a spreadsheet and entering it manually will be more efficient than the present totally manual operation.

- Fixed asset ledger

  A simple database management system is required to manage a fixed assets ledger. The Business Office wishes to identify all equipment and assets owned by NPLS, assign a realistic replacement value to each and generate inventory sheets for data collection and verification. Sorting and report generating capabilities with calculation functions will be required for this application.

- Payroll system limitations

  In spite of some limitations the payroll system is working quite well. Among the limitations are an inability to store payroll history after personnel classification and position changes. The software manages only the current position and classification. The operator would also like to be able to generate machine-readable reports for integration with the provincial system. At present reports for pensions, school taxes, group insurance, hiring totals and other general statistics have to be created manually.

- Software support and training

  To date support and training has been provided by TEW. Because of a number of changes and disruptions in TEW staff NPLS feels that it has not always had good value from TEW and that it is too dependent on TEW. TEW has announced that it will no longer be supporting the products installed at NPLS, and there is concern about the fact that software support will in future have to be obtained from British Columbia. The option of contracting with a local software technician is being explored. There is also concern that no one on the Business Office staff has sufficient training in the use of Xenix for trouble shooting and problem diagnosis.

- System expansion

  The present hardware is barely adequate for current applications. Some procedures, such as running the general ledger or doing backups, slow the system down unacceptably. The number of additional applications mentioned during our review indicates that additional hardware will be needed.

Throughout this chapter there are a number of recommendations which result of our review but are not directly related to the overall automation plan. The recommendations in this chapter are provided in the context of related discussion. The recommendations relating to an overall automated library collection management strategy will be provided at the conclusion of the report.

Recommendation #1

That software and training be obtained as soon as possible to support spreadsheet applications and a simple database management system. Symphony or Lotus 1-2-3 are being investigated for the applications described.

Recommendation #2

That Xenix training be provided for at least one person in the Business Office in order to make the group less reliant on outside consulting support.

Recommendation #3

That the option to form a local user group of offices using the same payroll and G/L software be explored, and that the group or NPLS independently contract with a local technician for software support.

Recommendation #4

That NPLS acquire a microcomputer, with a 20Mb or 30Mb hard disk for running MS/DOS applications such as spreadsheets, the fixed asset inventory and word processing. The options for attaching this microcomputer to the Xenix machine and/or transferring data between systems should be explored but this is not essential for the first applications.

2.2. Technical Services Department

The Technical Services Department is responsible for ordering, cataloguing and processing all books and annuals for all the Regions, the Provincial Reference and Resource Library (PRRL), and the St. John's City Libraries, numbering 109 locations in total.

2.2.1. Order Section

The purchase of books is centralized in the Technical Services Department. The regions select books from catalogues which they receive directly from the publishers. Orders received from the regions, St. John's City Libraries and the Provincial Reference and Resource Library are filed in title order and coordinated before forwarding to one of two main suppliers or, occasionally, direct to the publisher. A master order is prepared for titles required by more than one library. Locations and budget codes are noted for each requesting library. A five part order form is used: yellow and white copies go to the supplier, pink and blue are filed by order number, and the buff card is kept by the originator.

Order commitments are tracked by recording the estimated cost for each order as is is filed. The Order Clerk prepares a monthly report by budget code for the Business Office. Amounts for received and cancelled items also have to be factored into the monthly report.

Since it is not possible to track standing order commitments under the present system, these are included in the book status report only when received. A file of standing orders by title for all regions is maintained and each receipt is recorded with date and price. The Regional Libraries are responsible for tracking standing orders in their budgets but this is difficult to do and these commitments are sometimes forgotten when calculating the balance remaining in budgets.

When materials are delivered to Technical Services the receiving clerk comes down to the order section and pulls the pink and blue order slips. These are verified with the books and the exact cost from the invoice is noted on the blue slip. The total amounts on the invoice have to be manually calculated for each fund account. This information is then written on each copy of the invoice for the Business Office. The blue order slips are filed by month received and title, and kept for about 3 years.

On receipt one copy of the book is sent to cataloguing and the others are held in processing until the book returns.

Automation issues

While there are no serious backlogs in this section the procedures for maintaining budget totals are cumbersome and time consuming. Also, there is no way to track an order while waiting

for receipt without knowing the order number. An automated acquisitions system that is integrated with other library functions would make on-order information readily available to authorized users and manage the quite complex fund accounting that is required. An important requirement of an NPLS system would be the capability to assign invoice amounts to more than one budget code and to generate monthly reports for the Business Office.

With an automated system commitments and cancellations could be managed without noting each individual order for monthly totals. Standing orders could be tracked as commitments as well, and the status of orders would be readily available to staff in PRRL, St. John's City Libraries, and on an occasional basis through dial-up access to regional librarians.

2.2.2. Cataloguing

The Newfoundland Public Library Services began a machine-readable database in 1981 and which is maintained at Utlas. There are 108,000 records in the file, including maps, pamphlets for the Provincial Reference and Resource Library, and videos. An annual microfiche catalogue produced from this file, with bi-monthly cumulating supplements, is sent to all public libraries in the province. In addition, twenty fiche copies of the full bibliographic records in the file are produced for the Technical Services area, PRRL and all regional headquarters. Shelflist cards are ordered weekly for the PRRL.

Prior to 1981, a union card catalogue was maintained. There are still some cards in this file, arranged by main entry only. The holdings information on these cards indicate which region owns the title, but not which library in that region.

Cataloguing workflow

When a book arrives for cataloguing, the terminal operators search the fiche for the correct form of the author's name and check if the title is to be added to the existing record as an additional copy. If it is an "add", the operators note the Record Sequence Number (RSN) and put the book aside to be entered online. If the title is not found on the fiche, the book is set aside to be searched online. Once they are logged on to Utlas CATSS, the operators edit the holdings of the titles for "adds" and flag the record to be included in the next fiche catalogue. New titles are searched and printouts are obtained for cataloguers to edit offline. If the title cannot be found in the Utlas database, the operator places the book on the appropriate cataloguer's shelf for original cataloguing.

The cataloguers edit the printouts for the new titles to be added to the NPL file and return them to the terminal operator for input. Coding sheets are completed by the cataloguers for those titles not found in the Utlas database and returned to the operator for input online. Standard MARC coding practices are followed and ISBD is used for the descriptive cataloguing. Library of Congress Subject Headings are used primarily and Canadian headings are used where appropriate.

In 1988, 12,300 titles were catalogued.

Authority Control

Because of the costs, NPLS does not use the Utlas automated authority control. A card file of authors' names is maintained. When a cataloguer finds an author's name that is not in the file, the form of the name to be used is written on a slip and passed to the typist. Some "see also"

references are used. Once the typist completes the 3 x 5 cards, she returns them to the cataloguer for checking. The cards are then given to the Processing staff who file them. The cataloguers review the filing.

There is no card file for subject authorities. Technical Services receives notice of changes to the Library of Congress Subject Headings from the Cataloguing Service Bulletins. The Head of Technical Services and the cataloguers decide if a change is significant. If it is, they will check the fiche to see how many records have to be changed and will either change each record individually or have Utlas set up a memory loop.

Retrospective Conversion

A selective RECON for St. John's City Libraries and the PRRL is in progress. In addition, Grand Falls and Corner Brook send in old shelflist cards to Technical Services. Approximately 4,000 titles obtained prior to 1981 are added each year. In 1985, 14,000 non-fiction titles from the PRRL and various regional libraries were added to the Utlas file.

There is no way of knowing which titles obtained prior to 1981 are currently on the shelves in the regional libraries because no shelf reading has been done and fiction was not catalogued. The time and the money to do a proper shelf reading as a preliminary step to the RECON is not available.

Uncatalogued material

Some materials are uncatalogued and not included in the COM catalogue. These include: paperback fiction (except Canadian fiction or that of local interest); vertical file material; pamphlets (except those for the PRRL); juvenile series (for example, Nancy Drew or the Hardy Boys); maps (except those for the PRRL); and sound recordings.

Catalogue maintenance

The libraries notify Technical Services by mail of location changes or discards. In 1988, 4,000 titles were deleted from the online file and 1,200 location changes were made.

Cataloguing by mail

Technical Services will catalogue materials for the regions based on a copy of the title page. This service is used by the regions for gifts and other items acquired locally that are worth cataloguing for the Province. At least one regional librarian preferred to send the actual book for cataloguing so that it could also be processed. This is a matter of personal choice for the regions.

Automation Issues

o Use of Utlas

NPLS made a sound decision when it began to use Utlas in 1981. The result is that cataloguing information for a significant proportion of the collections is in a machine-readable form suitable for use with an automated library system. In the meantime, all service points have benefited from the availability of the fiche catalogue.

Staff in Technical Services are satisfied with Utlas services and find approximately 93% of their titles already catalogued by other libraries. However, the service is expensive and new technologies, such as CD-ROM, provide opportunities for cost-savings and benefits. Utlas has recently introduced CD-CATSS as a substitute for online access. We believe that NPLS should look at some alternatives in both technology and workflow to save direct online costs and possibly re-direct some of its budget towards completing the retrospective conversion. The options are discussed later in this report.

- o Authority control

  Lack of funds prevents NPLS from using the full capabilities of Utlas through authority control of headings and subjects in the cataloguing records. This means that manual files have to be maintained and there are no cross-references in the fiche catalogue. The lack of cross-references was mentioned as an impediment to full use of the catalogues by a number of regional librarians.

  Implementation of an in-house cataloguing system that still derived cataloguing copy from Utlas or an alternative source but supported automated authority control would improve the efficiency of the cataloguing staff, reduce manual files, and improve access to the collection.

- o Production of the microfiche catalogue

  Because Utlas is expensive it has been necessary to reduce the number of fiche cumulations. It has been suggested, therefore, that NPLS look at alternative sources for production of the microfiche catalogue. We recommend that such a move be part of an overall automation strategy, such as is in progress at this time.

- o Loss of Memorial University records from Utlas

  Concern was expressed about the loss of MUN records from Utlas as the Queen Elizabeth Library moves to an in-house system and CD-ROM online catalogue. As a fall-back position NPLS should investigate dial-up access to the new system and/or a copy of the CD-ROM catalogue and appropriate equipment. The primary concern was the loss of access to the locations of unique Newfoundland materials.

Recommendation #5

That NPLS maintain Utlas services until an overall automation plan is in place and approved. In the meantime the use of CD-CATSS to reduce online charges and/or facilitate additional retrospective conversion activities should be considered.

Options for alternative sources of cataloguing records are discussed below in Chapter 5.

2.3. Provincial Reference and Resource Library (PRRL)

2.3.1. Information services

PRRL provides reference and information services to the St. John's patrons and the Regions. Reference questions which cannot be satisfied at the regional resource libraries can be forwarded to the Provincial library. The introduction of the COM catalogue and the gradual development of the regional resource collections has reduced the title searching in the official

catalogue and the repetitive reference questions done for the regions because they now have subject access to the union catalogue at every branch. The questions now received from the regions are increasingly those which require more in-depth research.

The provincial resource collection is managed by this department and housed in the basement and third floor of the Arts and Culture Centre. Staff in this department all provide reference services in addition to special responsibilities, such as inter-library loans, government documents, periodicals control, and the PRRL.

2.3.2. Inter-library loan (ILL)

ILL requests which cannot be verified or satisfied using the COM catalogue are forwarded to PRRL. Most requests are made using Envoy electronic mail. The introduction of the COM union catalogue has dramatically reduced the number of specific requests coming into the Provincial office. However, the number of older materials that need to be checked in the union card catalogue and subject requests is increasing. The Provincial Reference Service loans materials from the general and Newfoundland collections when requested.

Requests are numbered and logged when received and then sorted into various categories. As requests are dealt with ILL forms are completed and sent to the appropriate source for supplying direct to the requesting library. Additional forms are often completed in order to notify the requesting library of the action taken.

Locations for out-of-province materials are obtained from National Library using Envoy. Because of the cost of the services and lack of readily available equipment, the ILL Librarian does not have access to DOBIS for locations, and Utlas REFCATSS is not used either.

Online access to a complete union catalogue and on-order files for all regions and services would reduce the amount of "detective" work that has to be done to satisfy requests and give the staff a single place to check all requests. At present checking an ILL request before going out of the province may involve checking as many as 5 or 6 files and catalogues.

2.3.3. Acquisitions

All materials are ordered through the Technical Services Order Clerk who processes them as described above.

2.3.4. Periodicals and government documents

Periodicals and newspapers for the PRRL are ordered through one of three agents or directly from the publisher. Kardex cards are used to track the receipt of periodicals and to manage claims. PRRL staff manage 710 periodical titles (815 subscriptions including some duplicates for the Newfoundland collection), and several hundred government documents and Statistics Canada series.

Periodical holdings for the PRRL and Corner Brook City Library are recorded in the Newfoundland Union List of Periodicals, is maintained by MUN Library in its Utlas file. Changes and deletions are forwarded to MUN by PRRL and Corner Brook independently. A printed or

microfiche product is produced every 2 years. MUN is in the process of transferring the file to its SPIRES system, and it is hoped that this valuable publication will be continued.

2.3.5. Newfoundland Collection

One of the important collections of the PRRL is the Newfoundland Collection of books, newspaper clippings, manuscripts and vertical files. It represents a valuable and unique archival collection which is used for research and general interest. Monographs and many of the pamphlets in the collection are included in the COM catalogue, and the collection has been given high priority in retrospective conversion. After reviewing the collection it was concluded that in-depth indexing of the pamphlets and clippings is not suitable for inclusion in the COM catalogue or in an automated collection control system. The options for providing additional access to the collection are discussed below.

2.3.6. Newfoundland Newspaper Index

The Library has been using a program at the University of Guelph to index Newfoundland newspapers, primarily the Evening Telegram. Worksheets were prepared by the staff and volunteers, and these were keypunched at NLCS and forwarded to Guelph. Indexing from approximately 1975 to December 1987 was included in the final printouts of 83,000 records (one coding sheet for each newspaper article indexed). This service has been discontinued because the University of Guelph no longer supports the programs that were used for index generation. From 1988-April 1989 the Library continued to create worksheets, and noted full subject headings on the sheets instead of the numbers which were recorded to refer to an authority list in the automated system. In April 1989 the Library stopped indexing due to lack of staff and uncertainty about the future of the Newfoundland Newspaper Index.

Automation issues

The chief areas of interest discussed with the PRRL Librarian were:

- Online Public Access Catalogue (OPAC)

  While the COM catalogue is a major improvement over the union catalogue on cards because it can be made available to every library service centre in the Province, it does have limitations in terms of providing in-depth reference services. An online catalogue, in conjunction with the St. John's City Libraries, would provide the reference librarians with improved access to the collection in terms of currency and added access points. They would also be able to see immediately the circulation status of materials in the collection, and review on-order information for other regions and services. This information is virtually inaccessible at present because orders in Technical Services are filed by order number only.

  The PRRL has put high priority on completing the retrospective conversion (recon) of the general and Newfoundland collections within the next 3 years. An OPAC would make this investment in time and resources all the more worthwhile because of the improved access and services that it would support. The importance of completing the recon was also emphasised by the ILL Librarian who has seen an increase in use of the PRRL collection as its existence becomes more readily available through the COM catalogue.

- Online search services

  PRRL would like to offer some online searching services for in-depth reference questions. Access to some general indexes of magazines, such as Reader's guide on Wilsonline or Canadian Business and Current Affairs on Dialog or CAN/OLE, would allow the reference staff to make greater use of the periodicals collection held at PRRL. An alternative to online access would be a subscription to the CD-ROM based versions of these indexes which patrons could use on their own behalf and staff could use to satisfy regional subject requests. A copy of the MUN CD-ROM catalogue would also be very useful to PRRL patrons and staff.

- Inter-library loan automation

  Microcomputer based programs are being developed to tie the management of ILL requests in with National Library's automation. The PRRL could take greater advantage of these services if it used a microcomputer to send its own Envoy messages. Message could be prepared off-line and sent to locations as required. The requesting region could be copied on these messages instead of writing new ILL forms to notify the region of action taken.

- Newfoundland Newspaper Index

  Microcomputer software exists to support a number of specialized indexes for the Newfoundland Collection, including the newspaper index. Requirements for such a program are included in Appendix I. The issues of funding and equipment required are addressed in later sections of this report. It is possible that funds could be obtained from the Social Sciences and Humanities Research Council - Strategic Grants Programme which is intended to fund the development of bibliographic tools that are important to Canadian studies. It is recommended that this avenue be investigated as a method of giving wider distribution to the Newfoundland materials.

- Office automation

  PRRL could make good use of a microcomputer for office automation, particularly word processing and maintaining statistics. This is also true of all regional library services, and the issue is further addressed later in this report. For PRRL the integration of word processing with simple database management capabilities and an online catalogue of the collections would enhance its ability to produce bibliographies and book lists for patrons and the regional libraries.

Recommendation #6

That priority be placed on completing the recon of the PRRL as its availability in the COM catalogue is beneficial to all service points in NPLS.

Recommendation #7

That steps be taken to ensure that the existing records for the Newfoundland Newspaper Index are securely duplicated and stored at NLCS until the feasibility of converting the records to a new system has been assessed.

Recommendation #8

That in the initial stages of the automation plan, the PRRL be provided with a microcomputer software to manage ILL requests, office automation software, a modem for Envoy communications, and appropriate training.

2.4. St. John's City Libraries (SJCL)

2.4.1. Acquisitions

The three librarians on staff at the A.C. Hunter Library make the final decision as to which books will be ordered. They highlight selections from Publishers Weekly and other catalogues and pass the catalogues on to the readers' advisors in the Information Services area. The readers' advisors may check off further titles to be considered for purchase and return the catalogues to the professional staff. Once the new titles have been decided upon, the catalogues are sent to a clerk-typist who types the multi-part order forms. One part of the order form is filed by author and maintained at the A.C. Hunter Library and the other parts of the form are forwarded to the Technical Services for coordination with regional orders.

Once the books arrive from NPLS Technical Services Processing, Hunter staff accession the books and remove the order form from their on-order file. A new books list, arranged in alphabetical order by author is compiled from these order forms using WordPerfect 4.1.

Automation issue

- Access to on-order file

  While staff work around the fact that order status is not readily available, their procedures would be greatly simplified by "one-stop" checking in an online system. They would be able to check orders, new titles, current collection and circulation status from any terminal in the library system.

  The same would be true in varying degrees for PRRL and regional staff.

2.4.2. Periodicals

Staff at the A.C. Hunter Library coordinate the ordering and processing of the approximately 150 serials held by all the branches of the St. John's City Libraries system. SMS Canada handles the orders, renewals and claims for 65 titles and H.H. Marshall for 46 titles. The titles ordered through H.H. Marshall are consolidated for bulk discount through PRRL staff. Forty titles are ordered directly from the publishers.

Serials are checked-in using a Kardex. The location is stamped on the periodical, which is then sent to the branch via van delivery or is shelved in the display area at Hunter. There is a limited routing list for certain types of magazines, e.g., the readers advisors see Maclean's and the teen magazines; once they have finished with the issues, they return them to the clerk-typist who shelves them in the display area.

Claims through SMS are handled monthly by Hunter staff. PRRL staff process claims through H.H. Marshall for both libraries. Depending on where the magazine is published, it can take a long time to arrive.

2.4.3. Talking Books

The talking book collection contains 1750 titles and serves all library patrons in the province who are sight-impaired or handicapped.

The staff at A.C. Hunter order the titles directly from the CNIB or from other publishers. Two copies of these order letters are prepared: one is filed in an on-order file folder and the other is sent to the Business Office for mailing. This latter step is necessary so that the Business Office knows what invoices will be coming in.

When the talking books arrive, staff process them and shelve them in the Talking Book area, which is not accessible to patrons. A new talking book list is prepared 2-3 times a year and is distributed to St. John's City Libraries home readers and the regional offices for further distribution to the community libraries. In 1987, a cumulative catalogue of talking books was prepared using a PC and WordPerfect 4.1. This catalogue is maintained on the PC.

The circulation of the talking books depends on the location patron who requests the talking books is located. SJCL patrons' requests are handled by the readers' advisors, out-of-town requests by the Talking Books library assistant, and SJCL home readers by the Home Readers Service staff. The latter two staff maintain one circulation file and the readers' advisors maintain another.

Automation issues

- Access to the collection

  Since this is a province-wide service, adding the talking book holdings to the fiche catalogue would greatly improve access for staff and patrons.

  For SJCL patrons and staff online access to the collection would be even better as it would integrate all circulation records and make the information immediately available to everyone dealing with these special materials.

2.4.4. Circulation

There are two circulation desks in the A.C. Hunter Library: one in the adult and the other in the children's department. Each department controls its circulation using numbered and punched McBee cards (T-cards). These cards are stamped with the due date and photographed with the patron's card and the title page of the book when the book is loaned. The T-card is circulated with the book and then pulled and sorted when the book is returned. Overdues are processed by checking the microfilm for all T-card numbers unreturned after 3 weeks.

Patron Files

Separate files are maintained in the adult and children's departments. Cards are filed alphabetically by name and the patron is issued with a borrower's card. Outstanding fines are indicated on the patron card by an orange dot.

Overdues

As mentioned above, overdues are identified by checking each week for missing numbers in the range of T-cards used 3 weeks ago. These missing numbers are entered in a notebook arranged by T-card number and date. Because the cards are re-used, staff must check the notebook to ensure that the missing T-card number coincides with the current overdue period. The microfilm is checked to obtain the patron name. An overdue notice is sent and staff note the patron name beside the T-card number in the notebook. Copies of the notices are filed in the Current Overdues Binder by patron name. If the book is not returned within two weeks, a replacement bill is issued to the patron for the missing title. The replacement value is verified in Books in Print and processing charges are included. If the book is still not returned within two weeks, staff then phone the patron. If after another two weeks the book is still not returned, the patron is put on the blacklist and is theoretically prevented from borrowing any more books. The blacklist is kept with the patron registration file and in the Circulation workroom. Copies of the blacklist are circulated to the other branch libraries in the system. Hunter staff produce all overdues for the system. However, branches deal with all follow-up and queries.

Reserves

Patrons may complete reserve requests for books that are not on the shelves. These requests are checked in the following files before the shelves are checked:

- reserves file (arranged by author)
- microfiche catalogue
- on-order file
- old fiction catalogue
- exchange file
- discard file
- binding list.

Any remaining reserve requests are then sorted into three sequences before the shelves are checked. Patrons are called when the book is available, and it is held for 3-7 days.

Fines

Fines are collected, but the current circulation system makes it a very time-consuming practice.

Automation issues

o Complexity

This simplified description of circulation routines does not give a true impression of the complexity of this process. It is clear that the volume of circulation has reached the point where the Library no longer has effective collection control with manual procedures.

The Recordak system is difficult to maintain and inaccurate because patrons can lose the T-cards and staff can sort incorrectly. Since differing loan periods cannot be handled there are supplementary manual files for these special cases. In addition, the camera equipment is old and no longer manufactured, repair costs are high, and faulty film or incorrectly loaded film results in loss of transactions.

- o Lack of information

  Staff and patrons are frustrated by the difficulty of obtaining basic information about circulation. Until a book is overdue it is impossible to tell a patron what books s/he has out, or when they are due back. It is virtually impossible to control the number of items on loan to a patron, or to catch delinquent borrowers.

- o Repetitive manual tasks

  Many errors creep into the circulation process because the system relies on frequent sorting and recording of T-card numbers. Constant filing and re-filing and loss of T-cards introduces more errors and problems. These errors result in incorrect overdues which are time consuming for staff and do not enhance the Library's image with the patron.

- o Overdues

  Preparation of overdues is time-consuming and labour-intensive. The necessity of waiting for film to be developed before notices can be sent out results in a 3-4 week delay. Once overdues have been identified on the film, information must be copied and maintained in a number of files in order to maintain the overdue and replacement records. In an automated system this process would be directly linked to the patron record and information would be readily available for overdues processing and patron management.

- o Reserves

  This service is labour-intensive and inefficient because of the limitations of the circulation system. Access to the reserves files is minimal and results in limited service to patrons. Lack of access to the circulation files also results in unreasonably complex procedures to catch reserved books as they are returned. Every circulating book has to be handled and checked in order to catch a few reserves. It is also very difficult to provide adequate service between branches.

2.4.5. Information Services and Inter-library Loan

There are 2 readers' advisors who help patrons find their way around the collection and take reserve requests. Reference questions are handled by sending the patron to the Provincial Reference and Resource Library. The Black report describes the limited reference service provided by SJCL.

Inter-library loan

Requests for titles not owned by SJCL are reviewed to determine if the book should be purchased or obtained on inter-library loan. Titles are checked against the microfiche catalogue to find Newfoundland locations. If no locations are found, titles are verified in printed sources such as Books in Print. Requests are then sent by mail to the lending library. Out-of-province requests are sent to PRRL who in turn send them directly to the lending libraries by electronic mail after the National Library location search has been completed.

Statistics on filled and unfilled requests are maintained as well as statistics on the number of filled and unfilled requests coming to SJCL from other libraries.

Home Readers Service

SJCL has 330 patrons registered for this service. Staff maintain manual lists of patrons whose names and addresses change constantly. Every three weeks, library staff visit each patron, delivering books chosen by the readers' advisors according to the patrons' tastes. Separate circulation files are maintained for these titles and for any talking books circulated through this service.

Exchange Collection

Every four months, Hunter staff send approximately 350 books and 50 large print tiles to the branches. Most of these are new books, but sometimes books are selected from the Hunter shelves to supplement an exchange.

To prepare for an exchange, staff check the bookcards from the exchange books which are shelved away from the public area. The bookcard contains the codes of the branches that have already had that title. If books are chosen from the Hunter shelves, staff must check the fiche to make sure the branch doesn't already own those books; the branch code is written on the bookcards; the bookcards are given to a clerk to type cards containing the author, title, accession number, the branch to which the book is being sent and the date of exchange. These cards are filed in the exchange file which is checked by the Readers' Advisors for reserve requests. The information on the bookcards is used to produce a list of the titles for inclusion in the shipment to the branches. Another copy of the list is used by staff who place spine labels on the exchange books and check that the shipment is complete. The books are then shipped to the branch.

When the books are returned, staff remove the spine labels, pull the cards from the exchange file, place the cards in the books and shelve the books. Once a title has been circulated to all three branches, staff determine which branch will keep the item permanently and inform Technical Services to change the location code on the fiche catalogue.

Automation issues

- Access to the collection

  In common with PRRL, St. John's City Libraries would benefit from online access to the catalogue. The time lag on new titles would be eliminated, on-order information would be readily available, and the circulation status of all PRRL and City Library books would be available to patrons and staff. As mentioned above, inter-library loans, talking

books, home readers service and the exchange collection could use the same circulation system as the main service points, thus eliminating multiple circulation files and systems.

- o Staff effectiveness

  Staff have been left behind by technology; the constant checking and re-checking of multiple files results in staff frustration and, in general, loss of control of the collection. Automated circulation is essential for effective and efficient use of staff.

2.5. Regional Libraries

There are 6 regional libraries in addition to the St. John's City Libraries. Each region has a professional librarian at the regional headquarters who, with the regional staff, is responsible for coordinating services at the community and branch libraries. The area covered by the regions and the number of branches served varies greatly but efforts have been made to standardize the services provided.

2.5.1. Administration

The regional librarians are responsible for administrative matters such as monitoring budgets, personnel and time-sheets. The increase in paperwork in recent years was frequently mentioned by regional librarians as detracting from their library service roles.

Automation issues

- o Communications

  While not strictly related to library automation, some issues relate to communications with the Business Office. In particular, an Envoy account specifically for the Business Office and direct access from that office by a member of the BO staff would simplify communications, and reduce memos and telephone calls. At present, regional staff are asked not to use Envoy for messages to the BO because these are mislaid among the general administration messages.

- o Statistics

  The number of statistics kept by the regions varies. However, since everyone has to submit a basic set of statistics to Headquarters, there is a case for increasing the office automation capabilities of the regions and providing standard layouts for use with spreadsheet and word processing software.

Recommendation #9

That in the initial stages of automation each regional office be provided with a microcomputer, office automation software, a modem for Envoy communications, and appropriate training.

Recommendation #10

That the Business Office be provided with its own Envoy mailbox (ADMIN.BO), training in the use of Envoy, and a modem on the proposed additional microcomputer for direct access to its mailbox.

2.5.2. Acquisitions

Book selection is done primarily by the regional librarians with some suggestions from the branches. Five-part order forms are prepared at regional headquarters; the buff card is kept while the others are forwarded to Technical Services. When books are received the order cards are pulled and the books are sorted for delivery to the regions, except in the LNR where books are mailed directly to each branch from Technical Services.

Automation issues

- Order tracking

  Even though it is difficult to track orders after they have been sent to Technical Services this does not seem to be a serious problem. Occasional dial-up access by regional library staff to an online order file in Technical Services would facilitate tracking orders when necessary.

- "Limbo files"

  Now that the microfiche catalogue is cumulated only once a year with bi-monthly supplements, there is a lag of between 2 and 4 months before a location appears in the catalogue. If a region orders additional copies of a title that is already in the catalogue the change is reflected in the supplements as well as in the annual cumulation. As a result there is a temptation to save order cards for items received in order to cover the gap.
  More serious than the creation of interim files is the amount of time spent checking that locations have eventually appear in the fiche. We do not believe that this is necessary. Technical Services is careful in its maintenance of the Utlas file and errors are generally too few to justify double checking. If "limbo files" are kept, we suggest that they be arranged by title, annual and supplement cut-off date and discarded when the annual cumulation or supplement is received.

2.5.3. Periodicals

Each region manages periodicals subscriptions and budgets for the branches in its region. The regions deal with a variety of periodicals agents and direct suppliers. The regions have various means of tracking that issues are being received at the branches. Generally, branches are asked to report exceptions and missing issues only or they report each month on the last issue received for each subscription. The regional staff do the claiming when necessary.

Automation issues

The present system seems to work quite well and gives the regions control over the materials provided in their branches. We would recommend that the paper work be minimised and branches be trusted to report only when problems arise, or the Bonavista-Burin check-in form should be adopted elsewhere.

2.5.4. Rotating collections

The regions maintain a core collection of books to supplement branch collections. The method of handling rotating collections varies in each region. In some a profile for each branch is maintained at regional headquarters showing the preferred breakdown of fiction and non-fiction in the block of books sent each time. Books have to be picked from the shelves, checked to see if they have been to that branch before, recorded on the exchange card to show temporary location, listed for the receiving library, packed and delivered. When books are returned the reverse occurs and the returning location is noted on the title page. In other regions fixed blocks of books are maintained and "rejuvenated" as funds permit.

Automation issues

While the volume may not justify a full-scale automated system for the rotating collection, this service takes a significant amount of time to administer. It also means that ILL requests have to be checked in a number of places to track regional copies of titles. Some regions have had to reduce the number of exchanges per year because of staff shortages. However, branches see this as a valuable supplement to their permanent collections.

Recommendation #11

That the option to develop a simple microcomputer based tracking system for rotating collections be investigated.

2.5.5. Information services and ILL

Resource collections are gradually being built up in the main regional centres. If a reference query cannot be satisfied locally it is passed first to regional headquarters, and then to PRRL.

As described above, the primary access to the collections is through the microfiche catalogues. All service points receive copies of the author/title and subject catalogues. The regional headquarters also receive the Full Bibliographic Record (FBR) listings. The regions have union catalogues in main-entry order for the pre-1981 titles. Because the branches do not have shelf-lists, it is not possible to do a regular inventory of materials.

The introduction of the fiche catalogue with branch level locations was a significant step in reducing reliance on Headquarters. It is also an investment that will pay off if the NPLS proceeds with online library automation. In comparison with some other provincial library services Newfoundland has excellent control of its collections in terms of knowing which libraries hold which titles.

Inter-library loan requests follow the same process. As mentioned above, the fiche catalogue allows the branches to deal directly with many more requests. However, subject and more esoteric requests are increasing. The files maintained for ILL varied in the regions but generally were related to monitoring the status of requests and statistics for the Provincial annual report.

Automation issues

o Inter-library loans

The Steering Committee and the regional and PRRL staff involved in ILL agreed with us that there are too many ILL forms generated for each request. We discussed reducing the paper work and follow-up reporting by concentrating on exception reporting and problem solving only. We would be pleased to discuss this further with the regional librarians.

o Access to the collections

The major complaint from the regions concerned the length of time it takes for changes, deletions and additions to be reflected in the fiche catalogue. This is a question of economics rather than efficiency. The changes are dealt with promptly at Technical Services but are not seen by the libraries until the next fiche catalogue is delivered because NPLS cannot afford more frequent production of the catalogue.

Development of a centralized online catalogue would support occasional dial-up access from the regions for the current status of titles. It will also be important to investigate options for generating the fiche catalogue from the in-house database more economically than can be done from Utlas.

2.5.6. Communications with Headquarters and PRRL

As mentioned above, we believe that more use could be made of Envoy, especially in communications with the Business Office. Procedures need to be developed but the BO could deal through Envoy with many of the small requests that are at present dealt with by telephone or memo. This would reduce long-distance phone calls and allow the Business Office to deal with queries more efficiently. Consideration should also be given to which monthly reports could be handled by Envoy. If the regional offices had microcomputers and could maintain reports on line and then deliver them to Administration and the Business Office by Envoy this might be much more efficient and effective.

With the introduction of microcomputers in PRRL and St. John's City Library, independent Envoy accounts should also be established.

2.6. Books-by-mail

Books-by-mail (BBM) service is provided to communities that do not have access to a branch library. An annotated catalogue is prepared once a year and mailed through Householder Mailings (a service of Canada Post) to all households in certain postcodes in Central Region and the Labrador & Northern Region. Books for the annual catalogue are purchased in bulk from Metro News in Toronto.

Procedures for BBM service are described in detail in a manual that was provided to the consultant. The discussion during our visit focused on the problems with the automated system installed about 2 years ago.

On the basis of a response to a Request for Proposal and advice from NLCS, NPLS purchased an Ocelot Library Automation System for circulation control. The intention was to build a

database of patrons who use the system and titles available for loan, and then to manage circulation and printing mailing labels and overdue notices through this system. The hardware consisted of an IBM-PC/AT compatible microcomputer with a hard disk, a tape backup drive, and an additional Wyse terminal for multi-user access.

Before the system was properly implemented the Ocelot product was sold to Columbia Computer Services, a Vancouver company that specialises in the school market. As a result development that was needed by NPLS was frozen and Columbia no longer supports the multi-user configuration with MultiLINK software as it is installed. NLCS and Columbia have been unsccessful in their attemp to resolve the situation.

BBM is able to use the system to circulate books and print labels. However, multi-user access is not well implemented or reliable. The most serious problem is the inability to print overdue notices, which along with better patron control was one of the major reasons for automating.

Automation issues

If the system performed as specified it would serve BBM quite well. According to A.Ball, the originator of the Ocelot program, the problem has been escalated to senior management at Columbia (private conversation with the consultant, 22 June 1989, at the CLA Conference). To support the current version of the program for multi-user access BBM will have to upgrade its equipment to include another microcomputer instead of the Wyse terminal, and install network software so that data can be shared by both workstations. The cost of adding a microcomputer and networking will be in the neighbourhood of $3500.

Recommendation #12

That BBM review workflow and staff scheduling so that the Ocelot system could be run as a single-user application on the existing microcomputer.

Having established a single-user application, NPLS will be in a position to put pressure on Columbia to provide a current version of the software without the hardware issue being used as an excuse.

We do not believe that additional expenditure for BBM automation can be justified until other more pressing needs, such as St. John's City circulation and PRRL and regional office automation, have been met.

2.7. Conclusion

During the current 5 year plan, 1985-1990, NPLS has made good progress in the areas of staffing and service development. However, the hoped-for investment in library automation to improve access to the collections has been lacking. As a result, the full value of the investment in Utlas is not being realised in terms of equalised access to the collections, and St. John's City Library is losing control of its collection because the circulation system is totally inadequate for the volume.

Our overall impression was of a dedicated and enthusiastic team of librarians and staff who are providing the best service possible with tools that are now outdated, thus limiting their potential to provide service. Current services are limited by the lack of:

- easily accessible information about on-order, in-process and newly catalogued titles;
- equipment to take advantage of cost-effective micro-based office automation; and
- effective collection control in St. John's City Library which has the circulation volume to take advantage of current library automation technology.

The next step for NPLS must be to select and implement an automated library collection management system to support current services more efficiently and cost-effectively while also providing opportunities for the development of new services and products.

The remainder of the report will cover:

- a definition of the requirements for the automated system (Chapter 3 and Appendix I);
- a review of the system options for NPLS (Chapter 4);
- an assessment of database creation options to support a provincial online catalogue and circulation control in the St. John's City Libraries system (Chapter 5);
- staffing requirements (Chapter 6);
- an analysis of the costs and benefits of automation (Chapter 7); and
- development of a strategic automation plan for overall library automation and a recommended course of action for implementation (Chapters 8 and 9).

3. Functional requirements for the application software

To assess feasibility it is necessary to define capabilities that will be required if an automated system is to meet the needs identified during the review of present operations. Having defined the requirements, it is possible to review system options and the available systems on the market to see if any existing systems meet NPLS needs.

Details of the functional requirements are listed in Appendix I: Functional Requirements for an Automated System for NPLS. Here we have identified the types of information to be managed, the tasks the system must support, and the products and statistics that are required.

These requirements should form the basis for a request for proposal (RFP) to potential vendors and/or system developers. Other sections of the RFP would include NPLS technical requirements, vendor support requirements, and general instructions about the submission of a proposal.

The foundation of an integrated library system is the machine readable catalogue that represents the library's holdings. Table 1a shows how the functions of the library are integrated by using various 'views' of the catalogue to support different activities. The distribution of functions in NPLS would be as follows:

Technical Services	Acquisitions Cataloguing
PRRL	Periodicals control Circulation and inventory Inter-library loan Online catalogue
SJCL	Periodicals control Circulation and inventory Media booking Inter-library loan Online catalogue
Regional headquarters and resource libraries	Online catalogue

Table 1b shows schematically how all the information in the database is stored and interacts to support library functions.

Table 1a: Relationship between library functions

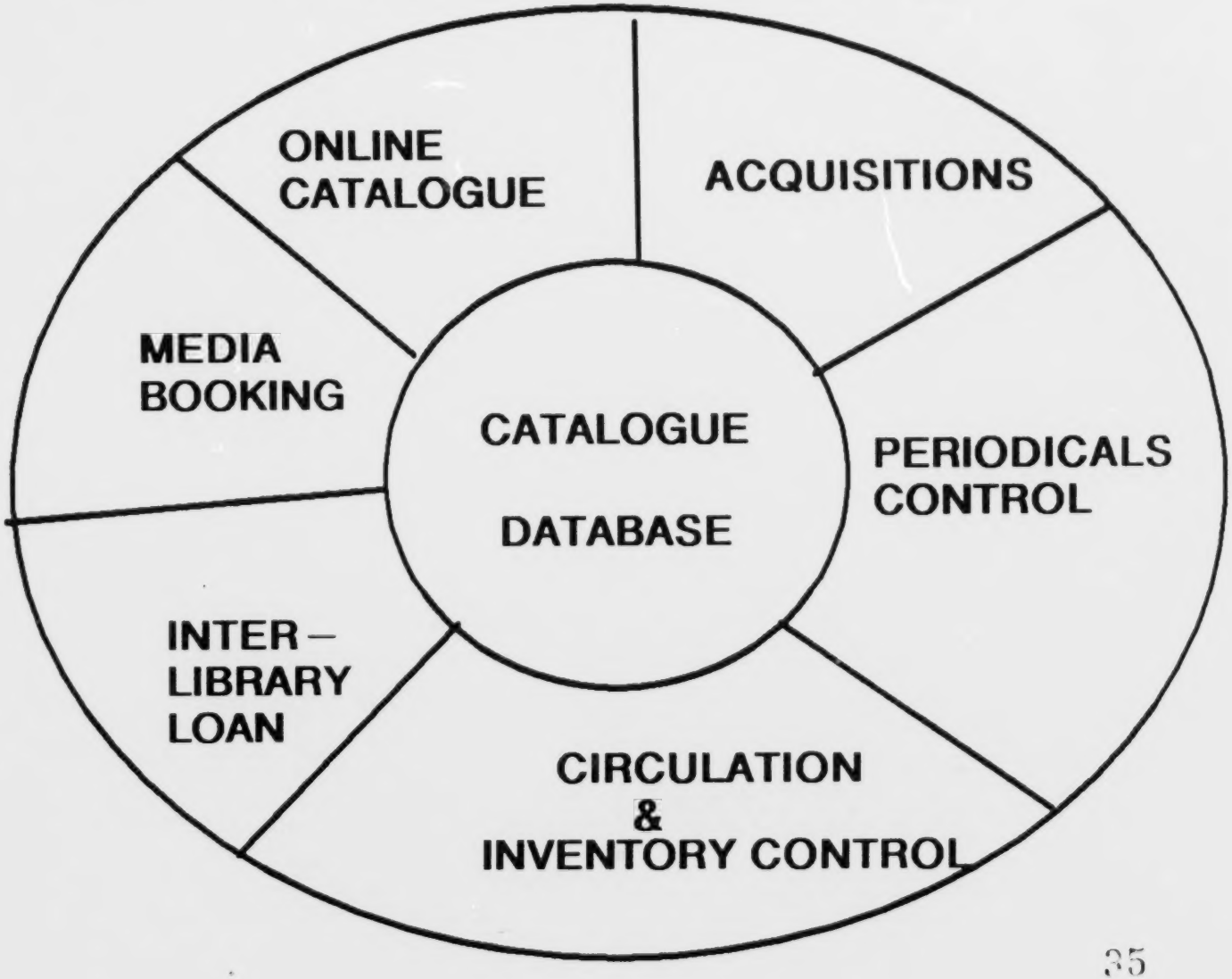
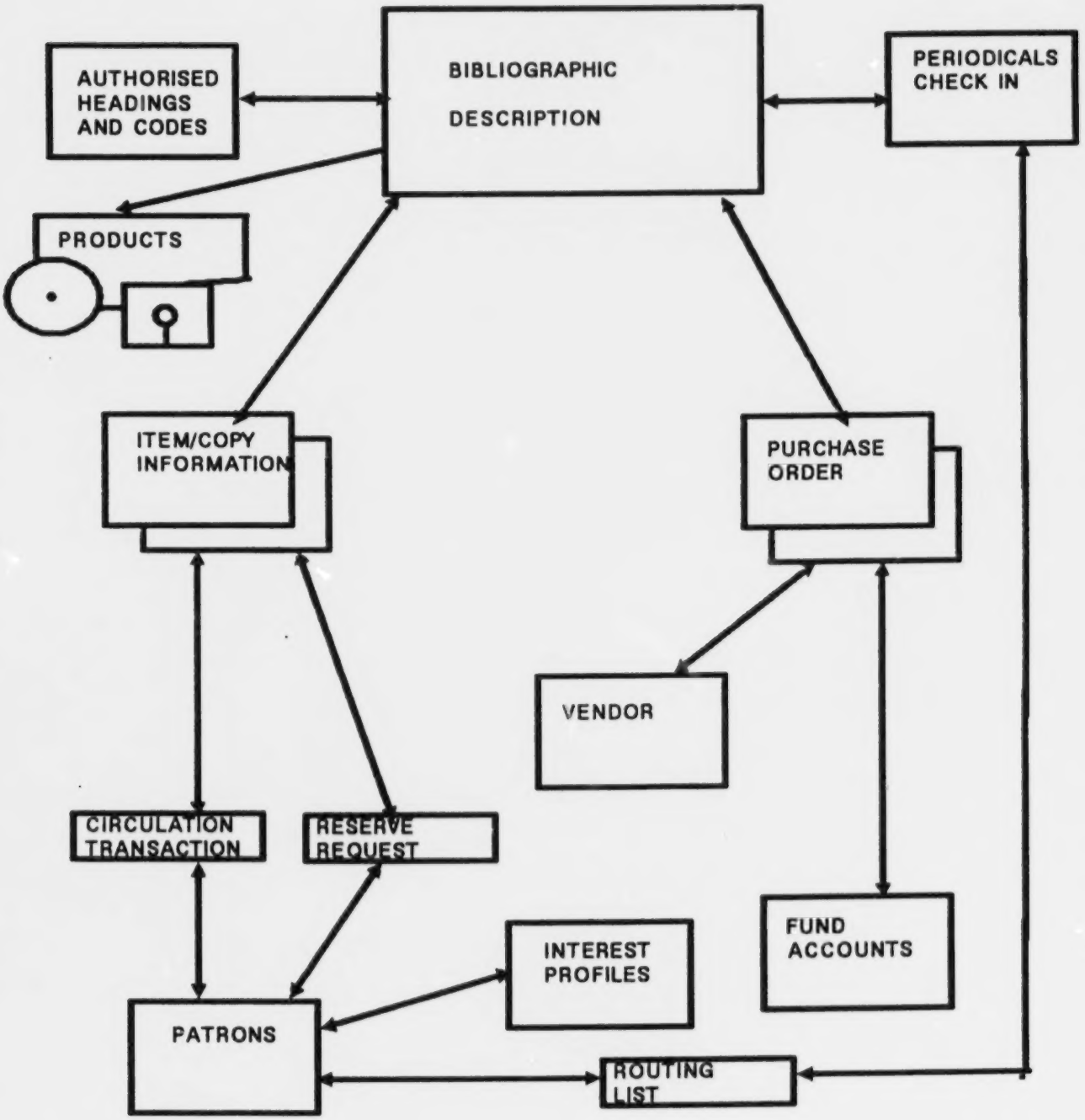


Table 1b: Integrated Library System database structure



4. System options

This chapter discusses the various hardware and software requirements and options open to NPLS for management of the collections and automating circulation for St. John's City Libraries.

4.1. Technical requirements

The basic technical requirements that the system must support include:

4.1.1. Access to the database and network support

The system must provide access for:

- Technical Services staff for union catalogue creation and maintenance, and for creating database products;
- Technical Services staff using microcomputer workstations and needing access from their workstations to external services or devices such as Utlas and/or CD-CATSS to derive cataloguing, and electronic mail services to communicate with agents and jobbers;
- PRRL staff providing reference services;
- PRRL and SJCL staff using the serials control module;
- PRRL ILL staff requiring integrated access to the union catalogue and external electronic mail services via microcomputer workstations;
- PRRL and SJCL patrons at all branches for the online catalogue inquiry;
- SJCL staff for circulation functions at all branches;
- NPLS management for statistical and inquiry purposes;
- Regional and Resource Library staff for online union catalogue inquiry, transmitting catalogue changes to Technical Services, and access to on order and in process information;
- Occasional network access from home and office computers for NPLS patrons wishing to use the union catalogue and transmit messages to NPLS staff;
- Support for Open Systems Interconnection standards as they evolve in order to facilitate exchange of bibliographic information with other automated systems, such as Memorial University of Newfoundland.

4.1.2. Terminals required

Terminals for accessing the system will be a mix of 'dumb' video display terminals (VDTs) and microcomputer workstations equipped with modems and some office automation software for multi-function uses. The microcomputers should be equipped with hard disk storage to provide staff with desktop capabilities for office automation as well as access to local and wide area networks.

The distribution of terminals and microcomputers is shown in Table 2.

4.1.3. Database storage capacity

Table 3 shows the statistical profile that was provided to vendors with the Request for Quotation. It should be noted that while it is estimated that NPLS will need to manage as many as 1.1 million individual locations, full item records will be required only for the estimated 150,000 volumes in PRRL and SJCL collections.

The system will be required to provide storage for unique bibliographic records and associated order, item, serials, vendor and patron records. Table 4 shows a typical scenario for the relationships between various records in the integrated library system database.

4.1.4. System security

Access to the union catalogue and library functions should be controlled by individual passwords which carry specific levels of security (i.e.. create, edit, delete or read only access to records). The system should also be able to limit functions to specific terminals, for example for the public catalogue.

Table 2: Distribution of terminals and workstations

	T	M	BCR[1]
NPLS Administration	2		
Technical Services Department			
Head	1		
Order Section	1		
Cataloguing	2	1	
Receiving and Processing	1		2
	5	1	2
Provincial Reference and Resource Library			
Head	1		
ILL Librarian	1		
ILL Technician		1	1
Periodicals control	1		
Government documents and statistics	1		
Reference desk (shared)	1		
Newfoundland Collection		1	
Storage area	1		
Public access	2		
	8	2	1
St. John's City Library			
A.C Hunter Branch			
Circulation desk and workroom	4		3
Public access	4		
Readers' Advisory desk	1		
Shut-in services	1		1
Children's / YA Librarian	1		
Children's Library circulation	2		2
Children's Library staff and public	2		
Periodicals control	1		
	16		6
Other branches (3)			
Circulation	6		6
Workroom	3		1
Public access	6		
	15		7
Regional Headquarters (6)		6	
Resource Libraries (6)		6	
Total	46	15	16

[1] T = Terminals; M = Microcomputer workstation; BCR = Barcoder reader

Table 3: Statistical profile for NPLS

Newfoundland Public Library Services	Titles	Volumes
Monographs	200,000	1,088,779
Annual acquisitions	13,000	

St. John's City Libraries	Titles	Volumes
Monographs	85,000 (est.)	116,329
Serials (including PRRL)	1,200 (est.)	
Sound recordings	4,149	
Annual acquisitions	4,800	

Annual circulation	1988-89	1987-88
A.C.Hunter Library	220,869	218,215
Gosling Library	40,102	40,230
Marjorie Mews	36,774	44,768
Michael Donovan	56,951	55,911
Total	354,696	359,124

Serials check-in	6-7000 per annum (est.)
Number of patrons	13,391

Machine readable records	
Number:	108,000 on Utlas
Since when:	1981
MARC format:	Utlas LCF
Recon:	Selective recon in progress

4.1.5. Hardware requirements

Hardware for the integrated library system should meet industry standards, support remote peripherals and distributed processing. It would be preferable to select a system that runs on hardware that incorporates recent technological advances such as parallel processing and RISC technology. Both parallel processing and Reduced Instruction Set Computing (RISC) are particularly well suited to the type of processing that libraries require, that is, large-scale multi-user systems which have to retrieve, process and sort large amounts of text information.

Hardware required to support the library system will include:

Central processing unit (CPU) consisting of:

- disk storage to accommodate 200,000 bibliographic records, software and associated overhead;
- capability to add additional storage when required without replacing the CPU;
- capability to add ports and peripherals as required
- sufficient memory to support the data processing and terminal requirements.

Magnetic tape drive for system backups

36-40 ports for terminals and workstations directly connected to the system

4-6 ports for access to and from the X.25 network

15 ports for local branch support
2 ports for direct-dial up
System console
System printer (high-speed laser printer)
Front end processor (FEP), modems and multiplexors to support network access
47 terminals
15 microcomputers
15 barcode readers
20 'slave' printers connected directly to individual terminals or workstations
Cables, tapes and other supplies

Estimated costs for this equipment, based on the results of the request for quotation, is summarized below in Section 4.4.

4.1.6. Network communications requirements

Network planning at this stage is limited by a host of variables including:

- types of hardware used to support the integrated library system
- exact distribution of terminals
- volume of data transmission
- record length
- traffic patterns, etc.

None of these variables can be firmly fixed until the system hardware and software are determined. In the meantime a network drawing of a possible configuration is provided in Table 4. This reflects the best estimate, based on information provided, but is subject to wide variances dependent on the different approaches of firms responding to a request for proposal.

The goal is eventually to provide staff at a terminal or microcomputer workstation with the capability to switch back and forth between communications tasks. For example where appropriate the operator should be able to switch between the NPLS library system and external services (such as Envoy or Utlas), and, if using a microcomputer, to transfer information between systems. Microcomputer operators should also be able to capture information from the NPLS system or external services, such as Envoy, for local processing. Switching between systems should be possible with a keystroke and without going through complex logon and logoff procedures.

The network to support the distribution of functions and terminals shown in Table 2 requires:

- ports on the ILS host computer;
- dial-up or dedicated lines to the ILS for terminals and most microcomputers;
- dial-up gateways to an X.25 packet switching network for access from the regions, resource libraries, and remote patrons;
- dial-up gateways to an X.25 public network for access to external services, such as Utlas and Envoy;
- inbound-outbound modem pool for local access by the branches and St. John's patrons.

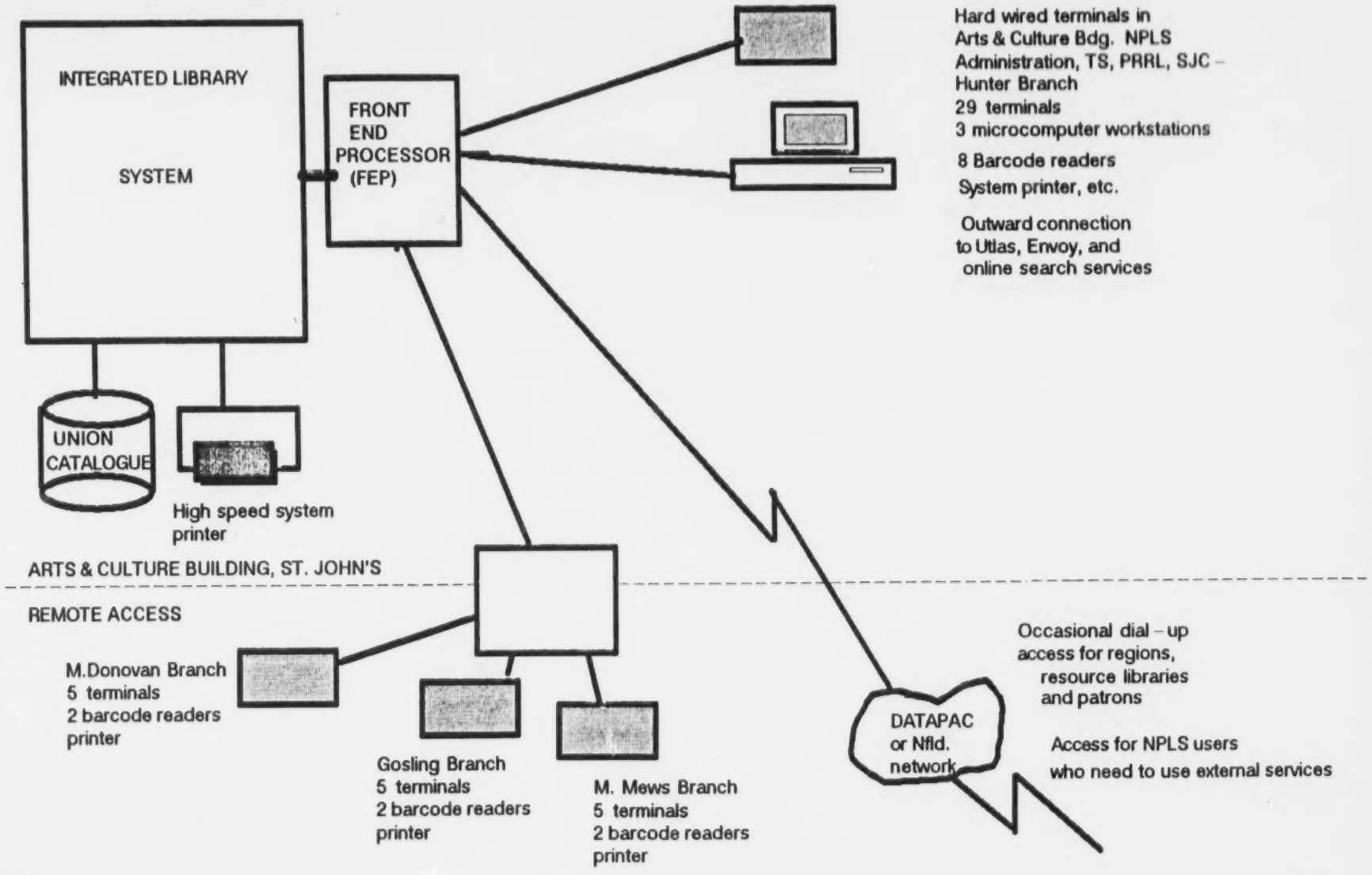


Table 4: NPLS Network

It is assumed that all terminals at the branches can be connected and active simultaneously. Two additional direct dial-up ports are provided for patron and maintenance uses. Seven simultaneous users are specified for access to and from the X.25 network.

4.2. Software options

The functional and technical requirements described above indicate that NPLS should look for library software specifically designed for collection control management rather than general purpose database software that might be adapted for library applications. NPLS needs are typical of the large and medium sized public libraries and consortia that have automated in the past few years. The library software market is maturing and there are a number of systems and services that will meet the needs of NPLS. For this reason it is assumed that NPLS has neither the resources nor the inclination to develop its own system. We recommend that NPLS look for an integrated solution from one vendor who supplies both the software and the hardware in a 'turnkey' package.

Requirements for the software and vendor should include the following:

- that the software runs on industry standard hardware with an operating system which is portable to a number of hardware platforms;
- that the vendor has been in the library automation business at least 5 years and has at least 3 similar installations in North America;
- that the vendor has a Canadian office and uses hardware that is supported in St. John's, Newfoundland.

In order to obtain current information about the library automation software market and quotations specifically for NPLS requirements, we issued a Request for Quotation (RFQ) in June 1989. The text of the RFQ is in Appendix II.

The RFQ was sent to the following vendors:

CLSI Inc., — LIBS 100
320 Nevada Street,
Newtonville, MA 02160

Data Research Associates, Inc. — ATLAS
1276 N. Warson Road,
St. Louis, Mo. 63132-1806

Dynix Library Systems Inc. — DYNIX
1 Blue Springs Drive,
Waterloo, Ontario, N2J 2M1

Geac Computer Corporation Ltd., — GLIS, ADVANCE
Markham Corporate Campus,
Suite 300, 11 Allstate Parkway,
Markham, Ont. L3R 9T8

INLEX Canada Inc., — INLEX
P.O. Box 68,
Bowen Island, B.C. V0N 1G0

Innovative Interfaces 2344 Sixth Street Berkeley, CA 94710	INNOVAQ, INNOPAC
Sobeco Group Inc. 505 boul. Rene Levesque W., Montreal, Quebec, H2Z 1Y7	multiLIS
Utlas International Canada, 80 Bloor St. West, 2nd floor, Toronto, Ont. M5S 2V1	UTLAS T/100
VTLS, Inc., 1800 Kraft Drive, Blacksburg, VA 24060	VTLS

Responses were received from CLSI, DRA, DYNIX, Brant Computers for Inlex Canada, Innovative Interfaces Inc., multiLIS, and VTLS. GEAC declined to respond. Utlas indicated that it would respond but no response has been received.

Following are some comments about the systems proposed:[1]

CLSI LIBS 100

Founded in 1971, CLSI is one of the oldest companies on the library automation scene. Over the past 2-3 years it has experienced difficulties maintaining its customer base and completing the move to the standard UNIX operating system. The move to UNIX will allow greater flexibility of hardware platforms. The LIBS 100 system has over 300 installations worldwide. All the required functions are available. The bid was received on time and is complete, including telecommunications equipment. However, no details on how the telecommunications set-up would work are mentioned. The prices quoted are in US funds and we assumed a $1.15 rate of exchange.

DRA

DRA is best known for its strict adherence to industry standards for hardware, software and data formats. DRA is particularly attractive to large library systems, for example North York Public Library in Toronto and Los Angeles Public Library. DRA bid their MARC database manager and cataloguing modules (MARION), circulation control (CIRCLE), ACQ-3800 and PAC-3800. The bid was received on time, but the price of the database load was obtained by phone. All the prices were quoted in Canadian funds. As with CLSI, the telecommunications equipment is included but not the details on how it would be set-up.

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[1] For additional information on these systems see also the product literature and the following recent article: Walton, Robert A. and Frank R. Bridge. "Automated system marketplace 1988: Focused on fulfilling commitments." Library Journal (April 1, 1989) pp. 41-52.

DYNIX

For the past 2-3 years this system has been one of the most successful in the library automation market. There are approximately 400 systems installed worldwide, and the Canadian subsidiary has been very successful since it opened its door in December 1988. Dartmouth Regional Library is in the process of implementing a DYNIX system, and it has been selected by the Saskatchewan Provincial Library and Peace Library System in Alberta. The system provides all the required modules except serials control which will be available in December 1989. The response to the RFQ was not submitted on time and was received only after repeated phone calls to the office. This gives rise to some concerns about whether the Canadian office is overextended. The quotation was complete and contained two hardware options. The Ultimate/DEC configuration was used for the high/low cost comparisons over 5 years.

INLEX Canada

Brant Computer Services in Halifax responded to the RFQ as the representative for INLEX Canada in the Maritimes. New Brunswick Provincial Library Service has recently selected this system for development of a union catalogue and to support Saint John Public Library circulation and public online catalogue. At this time contract negotiations have been completed and implementation is beginning. Since New Brunswick has no machine-readable records, it will be sometime before the system is really functional. All required functions are available except the serials control module which will make its debut in 1990. Brant felt it did not have all the necessary details to quote on the telecommunications equipment. Even without the telecommunications equipment, INLEX is the most expensive system.

Innovative Interfaces Inc. (III)

Best known for its excellent acquisitions and serials control systems III has recently completed its system by adding circulation and online public access. The software has recently been transferred from proprietary hardware to the DEC VAX environment. III bid the INNOPAC system which is their online public access module and INNOVACQ, the acquisitions and serials control systems. All the required functions are available except for inter-library loan. The prices quoted are in US funds and we assumed a $1.15 rate of exchange. No details were provided on the hardware and no mention made of the telecommunications aspect of the RFQ.

mulitLIS

multiLIS has been increasing its customer base steadily in Canada and the U.S. over the past 2-3 years. Installations in Canada include small and medium sized public libraries, universities, and regional/provincial systems. The system has its origins at the Université de Québec and versions for the UNIX and DEC VAX environments are marketed by Sobeco Group Inc. Sobeco responded to the bid on time. All the required functions are available except for serials control which is in development. The only telecommunications equipment bid consists of one 9600 baud modem. multiLIS is the least expensive system but it was not used in the high/low cost analysis because of the lack of information on telecommunications.

VTLS

The VTLS system runs on the Hewlett Packard Series 3000 minicomputers. The Metropolitan Toronto Reference Library has selected this system, and it is widely used as a regional system in Alaska. VTLS from Blacksburg, Virginia responded on time. The bid consisted of pricing on

VTLS software and cataloguing workstations and a difficult-to-decipher photocopy hardware quotation in Canadian funds from Hewlett Packard in Dartmouth. All the required functions are available. The prices for the software and VTLS services are in US funds and we assumed a $1.15 rate of exchange. They do not provide a price on the database load as they consider that to be customization. Telecommunications equipment is quoted, but no details are given for the set-up. VTLS was used as the highest priced system in the high/low cost analysis because the telecommunications equipment was quoted.

4.3. Microcomputer equipment

In addition to the integrated library system for collection control management there is a need for microcomputer based automation at the regional offices and resource libraries for office automation and simple database applications. To support such activities the following equipment is required:

Personal computer with 80286 Intel microprocessor (PC/AT compatible) with:
640K main memory
40Mb hard disk
1.2Mb 5 1/4" floppy diskette drive
1.4Mb 3 1/2" floppy diskette drive
Internal Hayes compatible modem
Hercules graphics card
Monochrome monitor
Enhanced PS/2 keyboard
Letter quality 15" printer with graphics capabilities

Software:
Operating system - DOS 3.3
Word Perfect version 5.0 for word processing
Lotus 1-2-3 version 2.2 or similar for statistics
Procomm + for communications
Rapid File or similar for simple database and mailing list applications
DBase IV or Inmagic for collection routing, PRRL indexing and more complex DBMS applications

The quotations used in the following section are list prices from Computerland in St. John's. No allowance is made for the fact that a discount would certainly be available since NPLS would be installing up to 15 of these systems. Since these are standard software packages it is also possible to obtain much of this software at discounted rates from reputable mail order firms in Canada and the U.S.

4.4. Estimated costs

The costs for automation break down into two categories: One-time costs involved in initial purchase and installation of the system and on-going costs involved in maintaining and using the system. In Table 5 the start-up and maintenance costs provided by the vendors are summarised. Other one-time costs to the library, such as site preparation, are also included. Following are some comments about these costs and an indication of which costs were estimated by the consultant.

- Hardware

  This includes the central processing unit of the computer (CPU), storage devices, printers, terminals, barcode readers, telecommunications equipment, and other peripherals. The equipment quotations varied greatly in the amount of telecommunications equipment included as this is the least well defined portion of NPLS' requirements. CLSI, DRA, and DYNIX provided the most complete telecommunications equipment quotes with adequate equipment for SJCL branch support and regional access. Twelve-percent PST was calculated on hardware only.

- Installation and cables

  These costs are for installing the ILS and are estimated for connecting the terminals within the Arts and Culture Building to the main computer. Some additional allowance for cabling and branch connections has been included in the library's one-time costs under site preparation.

- Training

  Generally included in the overall quotation. Where there was an itemized charge for documentation this was included in training costs. Not all quotations were explicit about whether travel to St. John's was included. We assumed that it was.

- Library application software

  The cost of the actual software for the integrated library system. All vendors itemized this except for Innovative Interfaces Inc. which included it in the main quotation with hardware. Software costs ranged from a high of $118,325 to a low of $73,500.

- Database load

  This item is for vendor charges incurred in loading the machine readable records that will be provided by Utlas. All vendors provided an estimate of the cost except VTLS.

- Annual maintenance

  These charges are made by the hardware and software vendors for ongoing support. In the case of hardware it is applicable for on-site maintenance visits and for responding to problems and equipment failure. Typically the hardware support contract will include replacement costs and commitments to arrive on-site within 2-4 hours. This level of support is necessary because the NPLS will be using the system to support SJCL circulation and the online catalogue for PRRL and SJCL.

  Software maintenance charges entitle the library to customer support, updates to the software, and membership in the user group.

- Telecommunications

  This line item is for the cost of maintaining telephone lines between the SJCL branches and the Arts and Culture Building, for regional access to the ILS, and for PRRL and other staff using the FEP to access external services. For the purposes of these estimates we have made an allowance of $10,000 per annum. NLCS were unable to

give an accurate estimate of the costs and this budget item needs to be more accurately assessed when NLCS is able to give more information about its proposed network.

The one-time library costs involved in selecting and implementing an automated library system follow. The amounts specified are generally based on experience with libraries of similar size and complexity.

- Site preparation

  In addition to the installation charges included in the vendor estimates the library will need to prepare a room and power supply for the computer and install cabling to terminals and in the branches. This allowance includes any additional furniture required for terminals and workstations.

- Consulting and implementation support

  This allowance is for consulting support to NPLS in order to complete the selection process and work with the library staff during the implementation process.

- Site visits and system selection costs

  During the selection process it will be necessary for some NPLS staff to visit existing sites of the preferred vendor and to make extensive long-distance telephone calls in order to check vendor references. Travel to user group meetings may also be paid for out of this allowance.

- Barcode labels and labelling project

  In order to implement circulation at PRRL and SJCL it will be necessary to attach barcodes to each circulating volume in the collection. It is possible to generate barcode labels from the holdings information in the database. The cost of these "smart" barcodes is approximately $67.00 per 1000 labels. For the purposes of budgeting it was assumed there are 200,000 volumes to be labelled. An allowance is also made for hiring minimum wage temporary staff to work with library staff on a labelling project.

The costs provided in these tables are used in Chapter 7 to develop a 5-year cost summary for automation at NPLS.

Table 5: Summary of costs from library system vendors

	CLSI (Sequent)	DRA (VAX)	DYNIX (Ultimate /DEC 3050)	DYNIX (Ultimate /BULL 6930)
Hardware				
- CPU, storage etc.	$285,798	$216,937	$269,880	$344,167
- terminals/workstations	$45,876	$42,536	$43,223	$43,223
- modems/multiplexors	$41,366	$81,941	$29,452	$29,452
- barcode readers	$15,542	$18,634	$24,444	$24,444
- printers			$18,295	$18,295
Installation and cables	$17,250	$17,942	$12,888	$12,888
Training	Included	$9,000	$24,919	$24,919
Customization	Included		Included	Included
Sub-total	$405,832	$386,990	$423,101	$497,388
12% PST (hardware only)	$46,630	$43,206	$44,040	$52,954
Shipping/insurance	$2,300	$6,498	$4,008	$4,008
Software				
- Library applications	$123,050	$118,325	$106,250	$106,250
- Database load	$21,098	$6,129	$9,500	$9,500
Less discount			($50,000)	($70,000)
Total (vendor specified)	$598,909	$561,148	$536,899	$600,100
Annual maintenance				
- hardware	$44,243	$24,420	$30,199	$33,715
- software	$14,766	$14,208	$11,300	$14,208
- telecommunications	$10,000	$10,000	$10,000	$10,000
Total annual cost	$69,009	$48,628	$51,499	$57,923

	INLEX (HP3000)	INNOPAC/ INNOVACQ	multiLIS (NCR Tower)	VTLS (HP3000)
Hardware				
- CPU, storage etc.	$372,831	Included	$116,040	$574,353
- terminals/workstations	$86,994	Included	$41,075	Included
- modems/multiplexors	No quote	No quote	$1,495	Included
- barcode readers	$12,409	Included	$20,400	Included
- printers	$16,659	Included	$11,200	Included
Installation and cables	Included	Included	$8,450	Included
Training	$16,600	Included	$8,960	Included
Customization	No quote	Included	$5,000	No quote
Sub-total	$505,493	$512,457	$212,620	$574,353
12% PST (hardware only)	$56,668	$61,495	$21,481	Included
Shipping/insurance				
Software				
- Library applications	$113,725	Included	$73,500	$84,525
- Database load	$10,000	$10,925	$7,400	No quote
Less discount				
Total (vendor specified)	$685,886	$584,877	$315,001	$658,878
Annual maintenance				
- hardware	$12,134	$46,120	$14,467	$20,265
- software	$21,228	Included	$9,030	$17,825
- telecommunications	$10,000	$10,000	$10,000	$10,000
Total annual cost	$43,362	$56,120	$33,497	$48,090

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Table 5: Summary of costs from library system vendors (continued)

One-time costs (Library)	
Site preparation	$10,000
Consulting & project management	$25,000
Site visits/user groups	$15,000
Startup supplies	$2,000
Barcode labels	$13,400
Utlas tape costs	$22,000
Barcode labelling project	$3,000
TOTAL	$90,400
Microcomputer workstations	
PC/AT compatible	$2,850
15" Printer with graphics	$900
Word Perfect v. 5.0	$380
Lotus 1-2-3	$520
Procomm plus	$99
Rapid file	$350
Database management system	$1,500
Sub-total	$6,599
12% PST	$792
TOTAL	$7,391

5. Database creation and management

This chapter addresses the question of union catalogue management after the implementation of an automated library system at NPLS.

5.1. Existing machine-readable records

Since 1981 NPLS has been maintaining the union catalogue on Utlas using the CATSS online cataloguing system. All significant materials purchased since 1981 have been included in the catalogue with detailed information about which branches hold each title. This enables NPLS to generate a microfiche union catalogue on a regular basis and provide every service point in the system with a full union catalogue. Although the COM catalogues are not as current as library staff might like, they are a considerable achievement and would be the envy of most other provincial public library services. These records, which can be transferred via magnetic tape, will form the basis of the online catalogue for the integrated library system.

In addition to the current acquisitions, an effort has been made to add PRRL materials retrospectively as time and resources permit. Conversion of the PRRL records should be completed within 3 years.

The Steering Committee supported the view of some regional librarians that most other materials purchased prior to 1981 were not worth cataloguing as part of a systematic retrospective conversion project. It was concluded that "last copies" would be picked up and converted as they were identified and forwarded to PRRL.

At present all catalogue maintenance (new records, changes and deletions) is done on the CATSS system involving costs in service charges and communications. The cost of Utlas use in 1988/89 was $56,000 for online access and $30,000 for the microfiche catalogues. In order to justify the investment in an integrated library system, it will be necessary to make some savings on the cost of Utlas services by maintaining the union catalogue locally. The options for this transfer are discussed below.

5.2. Options for catalogue maintenance with the ILS

In discussing the options for moving catalogue maintenance to the local system it is assumed that NPLS wishes to:

- continue to derive standard cataloguing in machine readable form, implying AACR2 cataloguing in MARC format;
- maintain all location and holdings information on the local system;
- report to a national union catalogue that NPLS holds a title but not necessarily which branches hold the title
- support authority control so that cross-references can be incorporated in the union catalogue;
- produce a microfiche union catalogue at least as frequently as at present for use at the regions and branches; and
- provide online access to the catalogue for staff and patrons as appropriate.

5.2.1. Maintain the status quo

Maintaining the status quo, i.e. current procedures, would involve continued cataloguing, and location and holdings maintenance on Utlas, then transferring the new and changed records to the NPLS system interactively or by magnetic tape to support the online catalogue and other functions.

Advantages

- provides a source of standard, machine-readable cataloguing; and
- location information would be maintained in the Utlas database for support of ILL.

Disadvantages

- no savings;
- cannot incorporate cross-references into the microfiche catalogue because NPLS cannot afford Utlas Authority Control Services; and
- location information would be duplicated in two databases and be more expensive to maintain.

Conclusion

Not a viable or sensible option as it would defeat the purpose of implementing an automated library system for NPLS.

5.2.2. Derive records from Utlas and maintain locally

NPLS could continue to derive the initial catalogue record for new acquisitions from Utlas, transfer it interactively, and record a 'generic' NPLS location in the record filed in the Utlas database. All further editing of the record for holding and locations, and authority control would be done on the local system. The microfiche could be produced by a third party, and the estimates obtained from two potential vendors indicate that it would be at a lower cost than from Utlas. (See Section 4.4)

Advantages

- savings in Utlas online costs and microfiche production;
- cross-references could be maintained on the local system and incorporated in the microfiche catalogue;
- NPLS presence would be maintained in a national union catalogue.

Disadvantages

- NPLS would not be taking advantage of new technologies which could reduce costs for acquiring cataloguing even further;
- NPLS would have to switch from a flat rate terminal with Utlas to the hourly connect charge which may result in minimal savings (the breakpoint is approximately 60 hours per month, 3 hours per day).

Conclusion

This is a workable option but it does not realise the cost savings which could be achieved by the following option.

5.2.3. CD-CATSS and CATSS

The development of CD-ROM as a medium for storing large quantities of text data has resulted in the introduction of cataloguing products which provide libraries with in-house sources of MARC records from the Library of Congress, National Library of Canada and other institutions. The Utlas product in this medium is known as CD-CATSS. Intended as a current cataloguing tool, as opposed to a retrospective conversion tool, it provides MARC records since 1984 from the United States, Canada, the UK, the National Library of Medicine etc., and frequently derived user contributed records. The operator identifies the record required to match the book in hand (or to be ordered) and then transfers the record to the local automated system for editing and incorporation in the union catalogue. Utlas offers other optional services with CD-CATSS:

- when no record is found on CD-CATSS the operator may connect to CATSS and download a record from the more comprehensive main database;
- records which are derived from CD-CATSS may be uploaded to the CATSS database to record that the library has the title for ILL purposes and also for authority control.

Table 6 shows possible relationships between Utlas CATSS, CD-CATSS and an in-house library system at NPLS. This scenario has recently been implemented at St. Mary's University Library in Halifax.

Advantages

- takes advantage of new technologies and significantly reduces direct online Utlas charges;
- provides a wide coverage of current cataloguing;
- provides the option to maintain a presence in a national union catalogue for ILL purposes;
- all union catalogue editing will be done locally;
- authority control can be done locally, with the option to look at or derive records from Utlas if necessary;
- authority records are becoming availablm for storing large quantities of text data has resulted in the introduction of cataloguing products which provide libraries with in-house sources of MARC records from the Library of Congress, National Library of Canada and other institutions. The Utlas product in this medium is known as CD-CATSS. Intended as a current cataloguing tool, as opposed to a retrospective conversion tool, it provides MARC records since 1984 from the United States, Canada, the UK, the National Library of Medicine etc., and frequently derived user contributed records. The operator identifies the record required to match the book in hand (or to be ordered) and then transfers the record to the local automated system for editing and incorporation in the union catalogue. Utlas offers other optional services with CD-CATSS:

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- takes advantage of new technologies and significantly reduces direct online Utlas charges;
- provides a wide coverage of current cataloguing;
- provides the option to maintain a presence in a national union catalogue for ILL purposes;
- all union catalogue editing will be done locally;
- authority control can be done locally, with the option to look at or derive records from Utlas if necessary;
- authority records are becoming available on CD-ROM and could be accessed with the same microcomputer equipment as is required for CD-CATSS;
- 3rd. party can be used for production of microfiche catalogues.

Disadvantages

- two step look up (CD-CATSS then Utlas CATSS) for a limited number of more unusual titles.

Conclusion

This appears to be the best option for NPLS by providing the best of both worlds, i.e. Utlas records and local control. Details of the costs and savings are in Section 5.4.

5.2.4. CD-CATSS only

Utlas does not require its CD-CATSS customers to also use CATSS. Ceasing to use CATSS entirely would mean that any records not found on CD-CATSS would have to be created originally in the local system.

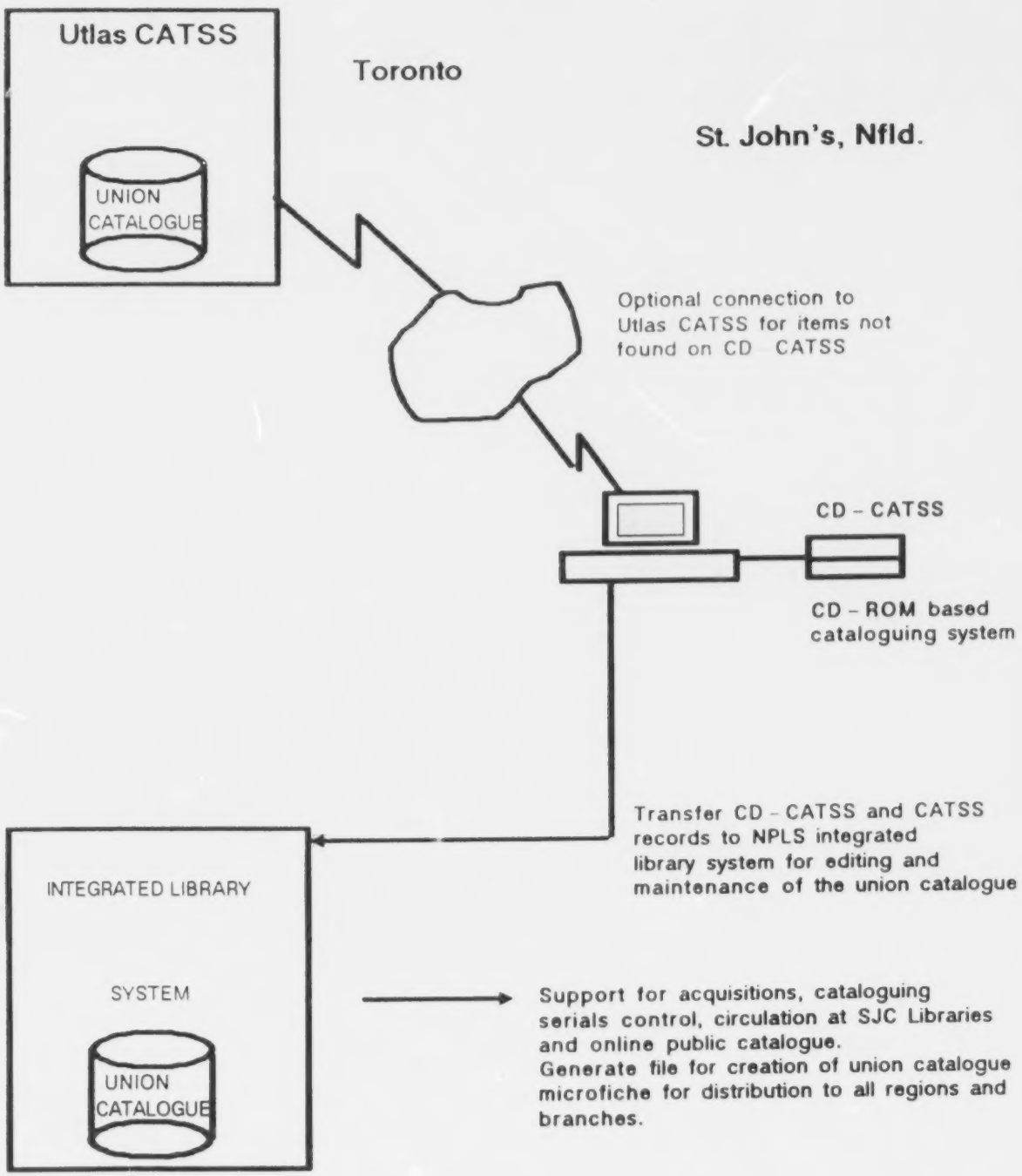
Advantages

- Utlas online charges would be eliminated entirely.

Disadvantages

- NPLS would have to find another way of reporting to a national union catalogue by generating tapes from the local system;
- unique records in the NPLS system would be available to other libraries for resource sharing only if a way could be found to report to a national union catalogue;
- the existing NPLS records on Utlas would not be maintained or added to;
- NPLS would have no access to unique records in CATSS which have not been included in CD-CATSS and would have to do more original cataloguing;
- NPLS would no longer have a back up catalogue on Utlas.

Table 6: Cataloguing and database support


Utlas CATSS
UNION CATALOGUE
Toronto
St. John's, Nfld.
Optional connection to Utlas CATSS for items not found on CD CATSS
CD - CATSS
CD - ROM based cataloguing system
Transfer CD - CATSS and CATSS records to NPLS integrated library system for editing and maintenance of the union catalogue
INTEGRATED LIBRARY SYSTEM
UNION CATALOGUE
Support for acquisitions, cataloguing serials control, circulation at SJC Libraries and online public catalogue.
Generate file for creation of union catalogue microfiche for distribution to all regions and branches.

Conclusion

Although this may be the least cost option, the disadvantages in terms of long-term networking and inter-library loan outweigh the advantages.

5.2.5. Other sources of cataloguing information

There are other sources of cataloguing information which do not involve Utlas at all, for example other CD-ROM products or services that provide records on the basis of search keys, such as ISBN numbers, submitted to the vendor. The CD-ROM products, such as Bibliofile, LaserQuest and SuperCAT function on the same principles as CD-CATSS and cover a longer time period of cataloguing. However, the longer time period is geared to retrospective conversion projects and means that the breadth of coverage is not as good as CD-CATSS.

Under the search key services, such as National Library's Machine Record Distribution Service or Marcive, the library transmits search keys and the vendor sends back records that match the search key. The library then has to load the records, check that the match is correct and edit the records. No hits have to be created directly on the local system. Although the cost of the records is very low (0.03-0.05 cents per record), the process is not as convenient as CD-ROM, and more local editing and record creation has to be done.

Conclusion

Since NPLS receives a very high hit rate on Utlas at present and could expect to maintain that with the combination of CD-CATSS and CATSS, we can see no advantages to pursuing alternative sources at present.

5.3. Issues affecting the decision

Before a final decision is made about database maintenance and where to obtain cataloguing source records, a number of issues need to be considered:

- o Cost

  An analysis of the potential cost savings through use of CD-CATSS are itemized in the following section.

- o Hit rate

  NPLS presently finds 93% of their titles catalogued by other libraries on Utlas CATSS. This level of service must be maintained. Before making a decision regarding CD-CATSS, Technical Services should obtain a system on approval and do some hit-rate tests on new materials entering the collection. This is the only way to verify that the CD-ROM product is a viable alternative.

- o Quality and consistency of records

  Similarly, live testing of CD-CATSS would satisfy the staff that the same quality of records will be obtained from the in-house source records as from CATSS.

- Standards used by NPLS and the vendor

  NPLS must maintain the standards already established through use of Utlas.

- Customer support

  Support must be available both from Utlas for use of CD-CATSS and from the ILS vendor for interfaces and COM catalogue production.

- Availability of alternative microfiche catalogue vendors

  If NPLS records are no longer maintained in their entirety on CATSS, it will be necessary to generate the COM union catalogue from the ILS. It is expected that this will result in considerable savings over the Utlas costs. Two vendors, General Research Corporation (GRC) and Auto-graphics Inc., were asked to provide estimates for an annual COM catalogue and 5 bi-monthly cumulating supplements. Because GRC is not able to provide a COM product in shelf list order, the Auto-graphics quote is used in the long-term cost estimates. The quotations are itemised below.

5.4. Estimated costs

There are three cost components to creating and maintaining the online catalogue:

- Transferring the existing Utlas file to an in-house system;
- Completion of the retrospective conversion;
- Ongoing maintenance of the online catalogue.

Each element is itemized below.

5.4.1. Obtaining the Utlas records

It is estimated that there will be approximately 120,000 records to be loaded from Utlas by the time the system is implemented. Estimates were obtained from Utlas for the cost of acquiring these records and of having a database walk[2] done to provide authority control and the associated cross-reference records.

The cost for a bibliographic tape in Utlas LCF format without authority control is $14,000.

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[2] A "database walk" (DBW) is Utlas' term for sequentially processing each record in a client file to perform a particular editing task. In the case of NPLS the DBW would match author and subject headings in the bibliographic records against authority records to correct headings and incorporate cross-references.

The cost of the bibliographic tape and authority tape with printouts for headings that did not match ranges from $18,400 to $40,000 depending on the type of database walk that is done. For a public library file we feel that the lowest cost process is adequate.

5.4.2. Retrospective conversion

We do not anticipate any incremental costs in this area as Technical Services already has this well in hand and expects to complete conversion of the significant titles in the NPLS collection within its current budget. Titles in SJCL that do not warrant full cataloguing on Utlas, such as paperbacks, can be briefly entered into the ILS as they circulate.

5.4.3. Ongoing maintenance

As discussed above we are recommending a combination of CD-CATSS and Utlas CATSS as sources of cataloguing records. The COM union catalogue should be produced directly from the in-house database by generating a file of USMARC records with all the branch holdings included and sending this to a third-party for production of the author/title/subject catalogue and the full bibliographic record in shelf-list order.

Table 7 summarizes ongoing maintenance costs for CD-CATSS, Utlas CATSS and COM production

In 1988/89 NPLS spent $56,000 on online maintenance with Utlas and a further $30,000 for the COM catalogues for a total of $86,000. From the data in Table 7 it can be seen that annual costs with CD-CATSS and Utlas CATSS will be less than $30,000, including maintaining a presence on Utlas for inter-library loan purposes. This is a saving of over 60%.

An alternative method of producing the COM catalogues would be to generate the sorted output files as if they were to be printed on paper. The resulting file can then be sent to a COM producer, e.g. Crowntek, for COM production. This would result in even greater savings but might require a more powerful in-house computer to support processing and sorting very large files.

Recommendation #13

That NPLS investigate the use of CD-CATSS with Utlas as an alternative to online use of CATSS as soon as possible with a view to saving some online costs before purchasing an integrated library system.

Recommendation #14

That in the longer term the NPLS union catalogue should be maintained on an in-house integrated library system with records derived from CD-CATSS and Utlas CATSS. The COM catalogue for branches should be produced by a third party from the in-house system and a presence should be maintained on Utlas by uploading records for ILL purposes.

Table 7: Summary of database maintenance costs

Cataloguing

	No. of records	Cost per record	Cost	
CD CATSS per year			$2,997.00	
Upload to Utlas CATSS	10400	$0.50	$5,200.00	80% hit rate on CD-CATSS
Deriving from CATSS	1690	$0.19	$321.10	13% derived from Utlas CATSS
Plus connect time/hour	1690	$1.60	$2,704.00	assumes deriving records at 20 per hour without editing on Utlas, hourly connect rate is $32.00
Upload originals	910	$0.50	$455.00	7% created on in-house system and uploaded to Utlas
Total records/year	13000			
Total cost per year			$11,677.10	
One time set-up, training			$2,350.00	
Training travel			$1,500.00	
Total one-time cost			$3,850.00	

COM catalogue production

General Research Corporation

1st master catalogue and 5 supplements	$24,150.00
Subsequent annual cost	$17,250.00

Note: GRC cannot produce a COM catalogue of full bibliographic records in shelf-list order

Auto-graphics Inc.

Annual cumulation	$10,346.00
5 supplements / year	$ 4,655.00
Total annual cost	$15,001.00

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6. Management of an automated library system

Acquiring technology is relatively easy. It is the managing, motivation, and training of the people involved that is critical and more challenging. Apart from the Technical Services staff who use Utlas, NPLS staff have had very little exposure to library automation or microcomputers. A commitment to staffing and training will be a critical factor in the introduction of the integrated library system and of microcomputers for office automation. Staff and management at NPLS are eager to improve their efficiency and services through automation and we do not anticipate serious resistance but proper training must be provided. This is especially true of the SJCL circulation staff who realise that they no longer have adequate control over the collection and are unable to provide useful information to patrons at present.

6.1. Staffing

There are two critical positions in the implementation of an automated system: systems or automation coordinator and database manager. The automation coordinator will be a new position at NPLS. The position of database manager falls naturally to the head of technical services or cataloguing in an existing organization. The difference between the two positions should be that the automation coordinator works with all departments to ensure that their needs are met and the system is available when and where it should be. The database manager is responsible for the content of the database which replaces the card catalogues. At NPLS this database function is already well understood in the maintenance of the Utlas file.

Typical responsibilities and qualifications for these positions are described below.

6.1.1. Automation coordinator

Duties and responsibilities

- coordinates the automation and systems programs within NPLS;
- coordinates training for library staff and serves as primary resource person in all matters regarding automation;
- assists NPLS management with both long- and short-range planning for automation;
- coordinates the acquisition and implementation of automated library systems and microcomputer applications;
- prepares appropriate budgets, reports and presentations;
- develops appropriate interfaces for the selected system with library operations and external databases;
- coordinates library automated systems with other Newfoundland agencies and programs;
- liaises with system vendors and suppliers;
- coordinates planning for office automation and library data processing using microcomputers for all NPLS;
- is responsible for the day-to-day management and availability of the integrated library system; and
- is responsible for the currency, integrity and security of the database.

Qualifications

- understanding of library operations and services;

- experience with a public library automated system or network;
- working knowledge of computer hardware and software;
- strong organizational, management and inter-personal skills;
- good analytical, problem solving, oral and written communications skills; and
- substantial microcomputer experience.

Recommendation #15

That the position of automation coordinator be funded in the next financial year and filled as soon as possible in order to implement the proposed plan.

6.1.2. Database manager

Duties and responsibilities

- overall responsibility for the currency and accuracy of the database;
- maintenance of online authority control for the union catalogue and resolution of conflicts;
- provision of name and subject heading references;
- responsibility for quality control in the bibliographic and authority files;
- development of procedures for the use of the automated system in technical services;
- maintenance of coding and procedure manuals and ensuring consistency of application;
- oversight of the effective operation of catalogue maintenance; and
- with the automation coordinator, production of products (e.g. the COM catalogue).

Qualifications

- knowledge of AACR2 and MARC coding for bibliographic and authority records;
- understanding of automated library systems and their application in technical services and uses in public services;
- good organizational and analytical skills; and
- accuracy and attention to detail.

This would not be a new position at NPLS, but rather a change of duties for the Head of Technical Services and members of the cataloguing department.

Recommendation #16

That the database management requirements be assessed by NPLS management and overall responsibility be assigned to the Head, Technical Services with a member of the cataloguing department responsible for day-to-day procedures.

All positions in cataloguing and processing need to be reviewed because cataloguers will be working directly online and use of Utlas will probably be replaced by an in-house CD-ROM system. The division of responsibilities might be as follows:

o terminal operator

- check if the title is new to NPLS or an added copy;
- derive records from CD-CATSS and/or Utlas for new materials;
- transfer records to an interim file in the integrated library system; and

- create item records attached to existing bibliographic records for new locations and added copies and volumes.

o cataloguers

One cataloguer should have responsibility for the authority and database management tasks described above.

The cataloguers' other tasks will include:

- editing derived records and transfer to union catalogue;
- creating original records;
- creating item records for SJCL and PRRL holdings to support circulation; and
- maintaining authority control and references.

o processors

- print spine and book pocket labels;
- barcode items for SJCL and PRRL collections.

By streamlining the workflow so that cataloguers work directly online instead of editing printouts and completing worksheets for terminal operators we believe that at least one and a half terminal operator positions and half a cataloguing position could be eliminated by attrition or re-assigned to another area of NPLS, such as PRRL, SJCL or the regions, for public service activities.

6.1.3. Other staffing

The introduction of automation will change the duties of most staff but not necessarily the responsibilities. Implementation of an automated system provides an excellent opportunity to review workflow and responsibilities.

Examples of changes and streamlining that will occur include:

o Order section

Instead of going to the Order Section to pull order slips, the receiving clerk will be able to retrieve the order record online immediately, verify it and change its status from on-order to received and in process. This information will be instantly available to all authorized users of the system.

o Processing

Labels will be generated directly from the online system in the quantity required for new materials. Repetitive typing will be eliminated.

o Periodicals and government documents control

Clerical staff in these sections will be able to control the acquisition and receipt of periodical materials through the online system. Claims and correspondence will be generated directly from information stored in the online system.

- SJCL circulation control

  The greatest changes will be in circulation control where overdues will be generated automatically using circulation transaction information and an integrated patron file. Rather than checking every returning book manually reserves will be recorded in the system, fines will be tracked and managed by the system and due dates will be calculated automatically. Staff will spend less time on "back room" tasks and will be able to serve the public with considerably more confidence in their collection management.

6.2 Training

There are several components to automation training at NPLS:

- Computer literacy

  Most of the staff at NPLS have had little or no exposure to computer technology. Improving overall computer literacy will reduce the fear of technological change and prepare staff for the introduction of automated systems and microcomputers. It may be possible to identify 1 or 2 videos for staff viewing at work or on their own time. Staff should be actively encouraged to take computer literacy courses at local schools and colleges.

- Microcomputer applications

  The introduction of microcomputers at the regional offices, PRRL and SJCL requires that all staff who will be using the software have proper training. The office automation and communications software suggested in Section 4.3 are standard, readily available packages for which training should be available at local community colleges and schools. The cost of local training has been factored into the cost estimates.

  It may be necessary to contract for some outside support to develop database applications for the regions, e.g. rotating collection and vertical file management, and it is essential that adequate training and documentation be provided by consultants as an integral part of their contracts.

- Integrated library system

  The ILS vendor provides initial training for the system manager, management and staff. The cost is included in the estimates provided by vendors responding to the RFQ. The focus of vendor provided training should be on training the trainers. After the initial training, NPLS will be responsible for training its own staff and documenting special procedures.

Training is an ongoing and critical function which should be managed by the automation coordinator.

Recommendation #17

That priority by placed on finding local training resources for microcomputer applications and that training in general be adequately supported to ensure successful implementation of the automated library system.

6.3. Estimated costs

Salary for the automation coordinator is estimated at $24,000 per annum. Against this expense potential savings in the Technical Services Department amount to $37,500. This represents half a cataloguer at $24,000 per annum and 1 1/2 terminal operators at $17,000.

Training for the integrated library system is included in the vendor proposals. In the 5-year system implementation plan an allowance of $300 per person for 30 people has been included for microcomputer training. This is to ensure that at least 2 people from each area receiving a micromputer are given formal training. These staff and the automation coordinator would be responsible for training additional staff in St. John's and the regions as required.

An allowance of $7500.00 has been included for contract development of specialized microcomputer applications.

7. The costs and benefits of library automation

An examination of the present situation at NPLS, and in particular St. John's City Libraries, indicates that further automation is both logical and essential - logical because considerable investment has been made over the past decade to build a machine-readable catalogue. It is now appropriate to take advantage of new technologies and systems to exploit that investment to its fullest. In-house automation is essential in order to save operational funds in the creation and maintenance of the catalogue, to support SJCL circulation and online catalogue needs, and to make collection information more widely available to regional staff and NPLS patrons. It is no exaggeration to say that SJCL no longer has adequate control of its collection. The volume of circulation has increased to the point where the Recordak system is no longer adequate or appropriate. Therefore, its replacement should be treated as a high priority.

The benefits of an automated library system can be both tangible (a dollar value can be assigned) and intangible. It is a fact of automation that intangible benefits are frequently more persuasive than the real savings that will be realised.

Tangible benefits will be found in reductions in costs of providing service using current and more appropriate automation instead of the predominantly manual methods that are now used. Reductions in costs tend to lead to the conclusion that staff would be reduced, but in general staff will be employed more effectively and will be able to develop new services and improve existing ones.

Cost displacements will be particularly evident in SJCL because less time will be needed to operate basic circulation routines such as check-in, check-out, reserves, and overdues. This does not mean a reduction in staff because SJCL is already operating with the basic staff complement needed to keep the branches open each week. However, those staff will have more time for direct service to the public, such as programming and assistance in using the library.

Cost avoidances include reduction in Utlas CATSS costs, elimination of the costly Recordak circulation system, and replacement or maintenance costs for current equipment such as typewriters.

Intangible benefits, for which it is difficult to assess a monetary value, can be identified in a number of areas: quality of service to patrons, efficiency and effectiveness of staff, networking and management information. These are described below.

7.1. Quality of service to NPLS clientele

Regional headquarters and resource libraries

Although automation benefits will be most evident to patrons in libraries that have online circulation and public catalogues, there will be benefits to patrons across the province:

- regional staff will have online access to current information in the union catalogue to deal will urgent requests;

- updates and changes to the catalogue will be dealt with more efficiently;

- automatic production of new book lists for distribution to branches and patrons, generated from the online bibliographic database;

- online availability of circulation status for materials in the PRRL and SJCL;

- online support for inter-library loans; and

- the option to increase the frequency of the fiche catalogue because of reduced production costs.

NPLS branch libraries

Automation will be least visible to the branch libraries spread throughout the province. However these are the front line of service to patrons and improved support from Headquarters and the Regional Headquarters will be evident in faster response to ILL requests, the availability of special and custom bibliographies for patrons who need them, more current catalogues, and improved control of rotating collections.

PRRL and SJCL

The automated library system will improve the quality of service to users and provide many services that are not now available. For example:

- after circulation is implemented, the ability to accept and process renewal requests, with or without the book in hand, and by telephone;

- the ability to provide patrons with the exact status of all items on loan to them, or to a member of their family, at any time;

- online access to a union catalogue of the entire library collections for patrons and staff, providing different and improved ways of approaching the collection;

- adult/juvenile catalogues accessible from any service point in the library system;

- the capability for staff and patrons to select and print bibliographies based on the libraries' holdings;

- access to cassettes, records and other special media online, and the ability to maintain and distribute special lists;

- improved reserves service, since less time will be spent searching the shelves to retrieve reserves and missing books will be more easily identified;

- improved reserves service from the branches - staff will have the capability to place reserves directly on any books in the PRRL and SJCL and inform the patron of its status;

- accurate, informative overdue notices;

- the ability to provide patrons with the circulation status of all items not on the shelves at the time of inquiry;

- the same services and information are available from all circulation desks;

- juveniles are introduced to library technology that is commonplace in universities and other information service centres; and

- community computer literacy is enhanced.

In addition to the direct service improvements for patrons, there are benefits for the library as a community service. Automation provides an opportunity to equalize service points in the town. Information will be more readily available at each branch. Within the provincial library system and Newfoundland as a whole PRRL and SJCL will maintain their presence as resource libraries in an increasingly automated environment and will be in a position to contribute to, and gain from, networking activities in the future.

7.2. Networking

Expansion of the online union catalogue and its in-house control of it will provide an important resource to position NPLS in the community of automated and networking libraries. The availability of the catalogue in an industry standard format, MARC, means that NPLS records can continue to be contributed to a national union catalogue for inter-library loan purposes and also merged with other Newfoundland library catalogues for the production of provincial catalogues. For example the MUN Newfoundland collection records could be merged with PRRL records for a specialized catalogue.

Through provincial networks or the Datapac network anyone with a communicating terminal or workstation could access the union catalogue regardless of location. This may be most applicable to business needs, and NPLS could cooperate with the Newfoundland and Labrador Development Corporation (NLDC) in this area. NLCS are committed to providing a province-wide open network within the next 2-3 years. They have suggested that NPLS could make cost-effective use of the network by using it at off-peak times to deliver orders and cataloguing change requests to the system in batch mode.

7.3. Efficiency, accuracy and timeliness of library routines

General efficiency, accuracy and timeliness of library routines will be greatly improved. Some routines at NPLS are error prone because the information is not conveniently stored.

For example, at SJCL overdues processing involves consulting many awkward microfilms, then creating special files to monitor the status of the overdue books. In Technical Services the present Utlas procedures involve "re-visiting" records to edit according to the changes made by cataloguers. This is the most expensive way to use Utlas and direct online editing by cataloguers and data entry clerks would be much more effective.

Implementation of an automated system shortens and simplifies procedures, as well as providing more accurate and informative notices to the patrons. Other examples include:

Technical Services

- the status of on-order items will be readily available online;

- regions will able to deliver orders and catalogue changes by electronic mail for integration into the online system, thereby eliminating repetitive typing and sorting and reducing the opportunities for introducing errors;

- availability of 'on order' information and status of an item from a single source resulting in some definable savings in terms of rationalizing collection development. This also improves the efficiency and accuracy of the acquisitions process by creating an online record as soon as the item is ordered, which can be upgraded to a full catalogue record when the item is received;

- management of a complex fund accounting system through the automated acquisitions module will reduce time spent on budget management and provide up-to-the-minute reports on the status of all materials budgets for the regions as required;

- preparation of catalogue information will be directly online and immediately available throughout the library system;

- changes and additions to catalogue information will be immediately available online, and regional librarians should be able to communicate these changes to Technical Services by electronic mail;

- fiche production from the in-house file will result in savings over the present Utlas costs;

- shelf listings by branch will be available for any location in NPLS so that inventory can be regularly performed at the libraries. At present there are no shelf-lists for the libraries and it is impossible to do any inventory checking.

PRRL and SJCL

- periodicals and government documents control can be automated and current holdings will be available at any service point;

- the ability to produce bibliographies and lists in response to reference questions in a timely and efficient manner;

- access to the catalogue and to electronic mail services can be integrated in a single workstation which will result in more efficient workflow for the ILL librarian and assistant;

- management of reserves at PRRL and SJCL by recording the request alongside the loan transaction in the system and relying on the system to alert the operator that a returning item is required by another reader;

- the ability to produce overdue notices for PRRL and SJCL loans;

- the ability to maintain fines accounts against patrons so that the fine for an overdue book checked in when the patron is not at the library can be collected at a later date; and

- an integrated patron file for SJCL which can be maintained on a regular basis and will be accessible from all service points and branches. A new online patron file will be a more accurate and comprehensive reflection of community use of the library than the present ones.

Automation in libraries is generally seen as job enrichment for persons whose tasks are primarily clerical. Routine tasks are done more efficiently and accurately and staff gain skills that are marketable in today's office environment.

7.4. Management information

The present manual environment does not provide easily accessible and useful management statistics in terms of collection profile and use. Nor does it facilitate any analysis of the users of NPLS. The integrated library system will provide meaningful management information to assist in the planning and decision making involved in running a library, e.g. collection development, staff utilization, patron use and the development of performance measures for the library. The availability of microcomputers at the regional and administrative offices will simplify the collection and maintenance of branch statistics and enable Headquarters to merge and manipulate regional information more efficiently and effectively.

7.5. Cost-benefit analysis

The cost-benefit analysis determines the financial viability of the proposed project. How do costs of automating the library functions compare to potential cost savings that could be achieved through automation?

Some comments about the source of the figures are in order:

- The tables have been calculated based on two sets of vendor costs, VTLS and one of the DYNIX options. These systems represent the highest and lowest bids which we judged to be complete systems including communications equipment and peripherals.

- Utlas savings are described in the previous chapter. These savings, and the cost of catalogue maintenance by the proposed methods, increase by 10% each year to reflect growth in the size of the database to be managed.

- An allowance has been made for cost displacements. These are primarily the value of staff time saved through automating manual operations, e.g. order slips no longer have to be sorted and filed, claims are processes automatically, circulation overdues are generated automatically and sorting of McBee cards is eliminated. These can be expected because staff will be able to perform their tasks more efficiently with the automated system than they can with the present manual procedures. With the exception of real savings in the cataloguing section the staff time displacement gained does not mean an overall reduction in staff but rather, an opportunity to provide better and more personal service to patrons by relieving staff of repetitive tasks better done by a computer. Based on a detailed 1988 study for Timmins Public Library, which has the same number of service points but a smaller collection than SJCL, we would expect the savings to be approximately $80,000 per annum once the system is fully implemented.

- Avoidances are savings in maintenance and repair of equipment that is no longer needed, such as typewriters and Recordak cameras. It should be noted that the Recordak cameras are already at the end of their useful lives and can no longer be easily repaired.

Table 8: Five year cost benefit analysis of automation at NPLS

Highest cost system: VTLS

	Year 1	Year 2	Year 3	Year 4	Year 5	Total
COSTS:						
Integr. library system		400,000	258,878			658,878
One time costs (NPLS)	20,000	70,400				90,400
Annual maintenance		48,090	48,090	48,090	48,090	192,360
Automation coordinator	24,000	24,000	24,000	24,000	24,000	120,000
Microcomputers	36,955	36,955	36,955			110,865
Training	9,000					9,000
Micro. development	7,500					7,500
CD-CATSS setup		3,850				3,850
Catalogue maintenance		26,677	29,345	32,279	35,507	123,808
Total	97,455	609,972	397,268	104,369	107,597	
Cumulative cost	97,455	707,427	1,104,695	1,209,064	1,316,661	
BENEFITS:						
Utlas savings		59,323	65,255	71,781	78,959	275,318
Staff savings		30,000	37,500	37,500	37,500	142,500
Displacement savings		50,000	60,000	70,000	80,000	260,000
Avoidances		10,000	6,000	6,000	6,000	28,000
Total	0	149,323	168,755	185,281	202,459	
Cumulative benefit	0	149,323	318,078	503,359	705,818	
Cumulative net benefit	(97,455)	(558,104)	(786,616)	(705,705)	(610,843)	

Lowest cost system: DYNIX (Ultimate/DEC 3050)

	Year 1	Year 2	Year 3	Year 4	Year 5	Total
COSTS:						
Integr. library system		350,000	186,899			536,899
One time costs (NPLS)	20,000	70,400				90,400
Annual maintenance		51,499	51,499	51,499	51,499	205,996
Automation coordinator	24,000	24,000	24,000	24,000	24,000	120,000
Microcomputers	36,955	36,955	36,955			110,865
Training	9,000					9,000
Micro. development	7,500					7,500
CD-CATSS setup		3,850				3,850
Catalogue maintenance		26,677	29,345	32,279	35,507	123,808
Total	97,455	563,381	328,698	107,778	111,006	
Cumulative cost	97,455	660,836	989,534	1,097,312	1,208,318	
BENEFITS:						
Utlas savings		59,323	65,255	71,781	78,959	275,318
Staff savings		30,000	37,500	37,500	37,500	142,500
Displacement savings		50,000	60,000	70,000	80,000	260,000
Avoidances		10,000	6,000	6,000	6,000	28,000
Total	0	149,323	168,755	185,281	202,459	
Cumulative benefit	0	149,323	318,078	503,359	705,818	
Cumulative net benefit	(97,455)	(511,513)	(671,455)	(593,953)	(502,500)	

8. System development strategy and implementation plan

This chapter provides a plan and strategy for the phased implementation of automation at NPLS. This approach provides some immediate benefits while planning for the library system continues. Implementation of the integrated library system is phased over several years to facilitate funding and the incorporation of new systems and procedures by NPLS staff. The following approach is suggested:

- o Obtain approval in principle from NPLS Board for the automation strategy;
- o Commence the budget and funding approval process.

As funding is received:

- o Appoint the automation coordinator;
- o Purchase and implement microcomputer applications at PRRL and regional headquarters with appropriate training;
- o Investigate the use of CD-CATSS in present procedures with a view to saving some online CATSS costs and gaining experience with a new technology;
- o Commence selection process for the integrated library system:
  - develop a Request for Proposal (RFP)
  - identify potential vendors based on the RFQ responses
  - issue the RFP and answer vendor questions as required
  - identify evaluation criteria and methodology for system selection
  - define mandatory vs. desirable requirements for comparison of vendor responses
  - evaluate responses from vendors
  - identify a ranked short-list of potential vendors
  - make site visits and reference checks for short-listed vendors
  - arrange on-site demonstration of preferred system(s)
  - confirm technical and vendor requirements
  - review cost proposals
  - make final selection recommendation
  - obtain Board approval
  - negotiate contract
  - sign contract
  - commence implementation;
- o Implement integrated library system according to the plan shown in Table 9.

A more detailed implementation plan and system development strategy should be developed as part of the system selection process.

Table 9: Implementation plan for NPLS automation

	1990	1991	1992	1993
System selection	Initiate selection process for conclusion early in following year	Conclude system selection process		
Staffing	Appoint automation coordinator		Gradual re-deployment of some cataloguing staff	
Microcomputer applications	Purchase and install microcomputers in PRRL and regional headquarters Provide training in office automation systems and use of communications software for Envoy Define requirements for specialized applications Develop formats and style sheets for general use with word processing and statistics	Develop specialized applications such as collection routing management, install and provide training	Install microcomputers at resource libraries	

Table 9: Implementation plan for NPLS automation (continued)

	1990	1991	1992	1993
Implementation of integrated library system		Acquisitions Cataloguing 3rd party COM catalogue production Online public catalogue at SJCL and PRRL Barcoding project at SJCL	SJCL circulation at all branches PRRL barcoding project PRRL circulation Remote access to online catalogue for regions and resource libraries	Periodicals control at PRRL and then SJCL
Database management	Limited use of CD-CATSS in conjunction with online Utlas CATSS Continue to maintain full union catalogue on Utlas	Transfer union catalogue to in-house system Post NPLS location only to Utlas CD-CATSS as primary source of cataloguing records Authority control		

9. Conclusion and recommendations

The intention of this study was to assess the feasibility of library automation at NPLS, to build upon the investment made in the past decade in creating a machine readable database, and to realise the real benefits of this initial investment. The Board is to be congratulated for its foresight in supporting this investment. The technologies are now available to move forward and improve library services and the effectiveness of staff resources.

Our final recommendations, which summarize the issues raised throughout this report are as follows:

Recommendation #18

That the NPLS Board approve in principle the proposed implementation plan for library automation and authorize commencement of the budget process.

The circulation problems at St. John's City Library system are especially critical. Circulation at all the branches has grown to the point where the Recordak system is no longer adequate. In addition, the Recordak equipment is worn out and can no longer be easily repaired. As requested we considered the option of installing an interim microcomputer-based circulation system. A review of the literature and of existing products produced no viable alternatives. We think that the investment involved both of time and of money would detract from the overall plan and would not contribute to solving the longer-term problem.

SJCL plays an important role in the NPLS by acting, with PRRL, as the most significant resource collection for the rest of the province. As such, they frequently purchase materials for province-wide use that no other library wishes to hold in its collection. Because of this role, automated circulation at SJCL will benefit NPLS patrons everywhere by providing accurate, timely information about the availability of materials.

Another Maritime public library of similar size but with only 3 service points is spending approximately $415,000 in vendor costs for an integrated library system and committing to an annual maintenance charge of $32,000 per annum. By joining the NPLS system SJCL will share the burden of automation costs. In addition to providing superior service to St. John's City residents they will be better able to fulfil their role as the major provincial resource library.

Recommendation #19

That St. John's City Library Board support the overall plan for NPLS library automation and that SJCL have priority in the implementation of circulation at all service points.

The decision to automate must be based on a number of factors:

- o availability of a system or systems that can meet NPLS needs;
- o the benefits - increased service levels, resource sharing opportunities, and the increased efficiency and effectiveness of library management and staff - to be gained from automation; and
- o the availability of funds.

New technologies are constantly evolving, and the RFP issued by NPLS should be structured to show the whole automation strategy, i.e. library functions, microcomputer activities, networking, etc., so that vendors have the opportunity to propose creative and complete solutions.

With the completion of this study NPLS is now in a position to proceed with obtaining resources and preparing to select the necessary automated systems. Real benefits will be gained quite quickly and increase rapidly as NPLS accumulates experience and is better able to exploit the considerable investment that has already been made in collection building and the Utlas-based union catalogue. To supplement its own collection, NPLS will also remain in the growing community of automated libraries that are able to share resources and provide more effective services.

APPENDICES

Appendix I: Functional Requirements for an Automated System for NPLS

This section describes the information that would need to be stored and managed in the automated library system, the functions to be supported, and the printed and other products required. The system described represents the library functions that were identified as appropriate for automation during the needs analysis phase of the project.

I. General requirements

- the system must support a single, integrated database which provides online access to the bibliographic information from any module of the software;
- search capabilities available in every module are standard and command language is similar to public online catalogue;
- system supports various levels of security for library staff and remote users and provides for different levels of expertise in system use;
- remote access to the public catalogue for St. John's City residents and regional staff;
- system supports use of MARC formats;
- capability to store and display European diacritic characters.

II. Cataloguing

The automated cataloguing system should have the ability to:

- define suitable bibliographic record formats for monographs, periodicals, microforms, cassettes and other materials as required;
- upgrade brief acquisitions records or edit cataloguing copy entered into the database at the time of placing an order;
- import MARC records derived from an external system, for example, from CD-ROM products such as BiblioFile, LaserQuest, CD-CATSS, and Utlas;
- merge imported records with brief acquisitions records based on a numeric key;
- export records in MARC format for reporting to a national union catalogue, or for a regional union catalogue for a future system upgrade;
- support union catalogue functions: multiple locations with different call numbers in some cases;
- create original records;
- provide automatic defaults for designated fields;
- create item specific records for the circulation system;
- manage authority control and create a "see" and "see also" reference structure to support client and staff access to the database;

- o maintain authority files for at least personal and corporate authors, series, subjects, and vendors;
- o edit records;
- o make global changes to records through use of authority control, and record by record for uncontrolled fields;
- o delete records for withdrawals;
- o manage analytic entries for cataloguing items in series;
- o create catalogue products such as lists in call number order, regular new book lists, periodical and other lists by material type, (e.g. microforms) or collection/location, spine labels, and special bibliographies by subject and other characteristics;
- o create user-defined and selected products such as
  - spine labels
  - new accessions lists
  - microfiche union catalogue
  - shelflists selected by location and collection for inventory purposes
  - lists by material type e.g. periodicals, audio-visual etc.)
- o generate cataloguing statistics such as monthly and year-to-date addition and withdrawal totals by collection, a running total of titles and volumes, and analysis of the collection by call number range;
- o support electronic messages for catalogue changes.

Specifically, the system should record and maintain the following information:

Bibliographic record

a. MARC record fixed field 008 including:
   - type of publication date
   - date 1
   - date 2
   - country of publication
   - government publication
   - type of publication
   - language
   - cataloguing source code
   - frequency
   - type of serial
   - successive / latest title
   - status (preliminary record, on order, in process, completed etc.)

b. ISBN
c. ISSN
d. Local call number
e. Personal author(s)
f. Corporate author(s)
g. Conference name(s)
h. Uniform title

i. Title, subtitle
j. Edition
k. Place of publication and publisher
l. Date of publication
m. Collation (physical description)
n. Series
o. Notes
p. Subject(s)
q. Summary holdings

Authority record

a. Authorized heading - personal name, corporate name, conference name, subject, or series including English and French equivalents
b. "See" references to the authorized heading
c. "See also" references to the authorized heading
d. Scope notes
e. Source of information and date

Authority files for the following types of information are suggested:

f. Personal names
g. Subject headings
h. Corporate names
i. Conferences
j. Series
k. Vendors

Item record

The following information needs to be recorded for each physical item that is going to circulate through an automated system:

a. Local call number (Dewey Decimal Classification)
b. Copy number
c. Volume number
d. Location, Branch, or Region
e. Collection (a call number prefix, e.g. reference)
f. Barcode (item) number
g. Material type (Monograph, serial, microform, film etc.)

3. Online access

Staff and patrons with varying degrees of expertise will require access to the bibliographic database. In summary, the requirements for the online catalogue are:

- access by author (personal and corporate), conference name, title, variant title, subtitle, series, subject, call number, ISBN, ISSN, and report number;

- access by keywords in personal and corporate names, titles, series, and subjects;

- the capability to truncate search terms, use Boolean operators (AND, OR, NOT), narrow searches by location or region, date, language, type of material, or collection, and search for adjacent terms;

- ability to limit searches by certain fields, e.g. location, type of material, language, date;

- automatic reference to "see" and "see also" terms through the authority record structure;

- for cataloguing: ability to
  - flag records requiring attention by Technical Services Department for location changes, deletions, and corrections; and
  - generate a list of these flagged records;

- for circulation: access by patron name, and items on reserve, in addition to the bibliographic access points described above;

- for acquisitions: access by date of the order, purchase order number, vendor name or account number, ISBN, ISSN, location code, budget code, invoice number, requester, status of order, commitment number, and author, title etc.;

- for periodicals control: access by title for check-in;

- multiple levels of display as appropriate, including indexes, brief and full records;

- ability to chain commands and choose between menu and command mode depending on expertise;

- ability to obtain products arranged in user-defined order;

- ability to display subject headings retrieved in alphabetical order;

- ability to print bibliographies in user-defined order;

- electronic messaging integrated in the system for staff and patron communications; and

- bulletin boards for patrons and regional staff.

4. **Circulation and inventory control (St. John's City and PRRL only)**

This section describes the information to be recorded and processed in order to manage the circulation and inventory control functions of the library.

Patron record

A "patron:" may be any one of the following:

- an individual borrower
- a borrower who uses the shut-in service
- a library that borrows materials on an individual basis through interlibrary loan (ILL)
- a pseudo-patron denoting a temporary location, e.g. binding

The following information must be recorded and maintained:

a. Borrower name (surname, first name, initials or a library symbol or name for ILL and/or block loans)
b. Borrower number (barcode)
c. Address
d. Phone number
e. Comments or messages (free text)
f. Date of registration (set automatically)
g. Date of expiry
h. Library-defined fields (up to 5)
i. Borrower type
j. Parent or guardian for juveniles
k. Familial link
l. Notes

Bibliographic item record

The following information is stored and can be displayed (depending on security level of operator) for each physical item in the database:

a. Circulation category
b. Status (e.g. on loan, on shelf, missing, binding)
c. Name of borrower or ILL borrowing library
d. Date item originally borrowed
e. Date due
f. Names of borrowers with a reserve on the item
g. Renewals (number of times)
h. Number of overdues sent
i. Date last overdue sent
j. Date recall notice sent
k. Whether item record was created "on the fly"
l. Whether copy on loan from another library
m. Date "replacement notice" sent

In order to maintain circulation records the system is required to create links between the individual item on loan, the date it is due back at the library, and the patron borrowing it. The tasks that constitute the circulation system are:

- charge all types of library materials including individual issues of periodicals;
- discharge of loaned items;
- manage renewals and non-standard due dates even if the item is not in-hand;
- block the loan of non-circulating items;
- maintain and display patron information;
- manage the placing of holds on a title by registering a request, maintaining waiting lists or queues, notifying requester on return of requested item, alerting the operator when reserve about to be checked out, and recalling requested items;

- identify patrons returning items late;
- produce overdue notices;
- retrieve circulation information for named item or patron;
- collect and manipulate statistics on collection use;
- produce listings of items on loan by patron; and
- support inventory of a call number range, collection, branch, or type of material (e.g. periodicals) using a portable barcode reader.

6. **Acquisitions**

Automating acquisitions requires the capability to:

- search efficiently, in a single online file, to determine if the title is already held or on order by NPLS;
- manage acquisition of books and non-book materials for the library collections and branch copies;
- maintain subscriptions by agent and direct order, standing orders, and memberships;
- maintain a record of retention and holdings policies, and selection decisions;
- enter brief bibliographic records or load bibliographic records from an external source, and merge with order information for library acquisitions;
- maintain vendor and fund account information for both agent and direct orders;
- print purchase orders including bibliographic information and option for different "ship to" and "bill to" addresses;
- prepare machine-readable orders for electronic transfer to the vendor;
- record commitments against appropriate account for individual purchases;
- maintain on-order records in the bibliographic database;
- identify outstanding orders and prepare claims by vendor;
- track non-receipt of prepaid orders;
- verify the correct item is received;
- maintain currency table for conversions;
- record expenditure with final amount charged;
- charge invoices to multiple accounts where appropriate;

- prepare fund account information for electronic link to the departmental financial system;
- change the status of the title to "in-process" after receipt of item and prior to full cataloguing;
- generate reports on the status of outstanding orders and subscriptions;
- provide acquisitions statistics by collection, location, language, or material type;
- identify source of supply for titles;
- ability to effectively handle new orders, renewals, standing orders, continuations, prepayments, deposit accounts, gifts, and exchanges for multiple locations;
- ability to handle commitments for the above-noted categories, as required;
- ability to search, edit, revise, and update acquisitions records; and
- generate reports as required for PRRL, SJC, and regions on:
  - status of budgets
  - claims made
  - cancellations
  - unfilled orders for reconsideration.

Order information

The following information needs to be defined and recorded in the order record:

a. P.O. number
b. Vendor or supplier name
c. Budget code(s)
d. Order date
e. Date order completed
f. Date order cancelled
g. Claim frequency
h. 1st, 2nd, 3rd claim dates
i. Estimated price in Canadian funds
j. Actual price in Canadian funds
k. Currency type
l. Price in local currency
m. Total funds committed
n. Number of copies ordered
o. Distribution of copies on receipt
p. Number of copies received
q. Number of copies invoiced
r. Date invoice passed for payment
s. Notes (Rush, etc.)
t. Receipt history for each copy
   - copy number
   - date copy received
   - invoice number
   - date invoice received
   - cheque requisition number

- fund account debited

u. Type of order or method of receipt, e.g. purchase, subscription, membership, standing order, gift
v. Person who initiated the order
w. Status of order

Subscription information for PRRL

In addition to the order information above:

a. Agent
b. Reminder date for subscription renewal
c. Date subscription ends
d. Length of subscription in months (for multi-year subscriptions)
e. Frequency

Vendor information

a. Vendor name
b. Mailing address
c. Shipping address for returns
d. Telephone number
e. Contact person
f. Claim category
g. Total copies received
h. Total time delay before receipt in days
i. Number of claims outstanding

Fund information

a. Library fund
b. Description
c. Date fiscal year began
d. Total number of titles received
e. Total amount for the fiscal year
f. Total amount committed
g. Total remaining in fund
h. Total amount paid
i. Responsible manager

7. **Periodicals control**

In order to manage the ongoing receipt of periodicals issues, the system must provide the capability to:

- o create bibliographical records for each title under the cataloguing module;
- o create checking in records for each subscription;
- o link checking in records to appropriate bibliographic record;
- o maintain information on ordering, renewing, and cancelling of subscriptions;
- o maintain information about changed and ceased titles;

- o manage both agent and direct subscriptions;
- o manage subscriptions, memberships and standing orders, including holdings and retention policies;
- o record binding policies;
- o receive and check in new issues;
- o track non-receipt of issues and claim missing ones;
- o track non-receipt of new and renewed subscriptions;
- o route and manage circulation of individual issues, link routing information to circulation patron file;
- o generate reports by routing participants, branch and departmental components, and titles being routed;
- o generate management information statistics on total issues received, number of current and ceased subscriptions, and the average cost of subscriptions; and
- o ability to produce an alphabetical periodicals list with summary holdings.

In addition, the system must record and maintain the following copy and issue specific information:

Holdings record

a. Copy (subscription) number
b. Volume
c. Cover date
d. Receipt date
e. Indexes received
f. Cumulations, supplements and special issues received
g. Frequency
h. Expected date of next issue
i. Retention policy
j. Disposition (e.g. "current issue in reference", "current issue circulates")
k. Call number
l. Location
m. Claims made
n. Routing list
o. Table of contents distribution list
p. Notes

8. Management information

In addition to the reports generated by the various functions, there is a need to manipulate the statistics to produce management reports such as:

- o trend reports comparing activity over time;

- reports analyzing change over time;
- comparison reports among departments;
- collection use analysis;
- acquisitions analysis; and
- custom reports by type of publication, subject, etc.

The library also requires links or support for other software packages that will be useful in its day-to-day operations, for example, word processing, spreadsheets, and communications for access to cataloguing copy on online systems.

Vendor Information

	CLSI	DRA	INLEX	INNOPAC/ INNOVACQ	multiLIS	VTLS
Head Office	Newtonville, MA	St. Louis, Missouri	Monterey, CA	Berkeley, CA	Montreal, Que.	Blacksburg, VA
Local Office for Customer Support	Newtonville, MA	St. Louis, Missouri	Halifax, N.S.	Berkeley, CA	Montreal, Que.	Blacksburg, VA
Contact	Teri Murphy, Bid Manager	Bobbie Yunker, Vice President, Field Operations	Patti McCaffrey, Marketing Consultant	Leslie Straus, Library Consultant	Alain Deschenes, Marketing Representative	Anita Bennett, Marketing Representative
Other Sites	No details provided	North York Public Library, North York, Ont. Ottawa Public Library, Ottawa, Ont.	Belleville and Trenton Public Libraries, Belleville, Ont. Sudbury Public Library, Sudbury, Ont.	No details provided	No details provided	State Library of the USSR, Moscow Metro Toronto Reference Library

BEST COPY AVAILABLE

Functions Available

	CLSI	DRA	INLEX	INNOPAC/ INNOVACQ	multiLIS	VTLS
Cataloguing	Yes	Yes	Yes	Yes	Yes	Yes
- MARC format	Yes	Yes	Yes	Yes	Yes	Yes
- Union catalogue management	Yes	Yes	Yes	Yes	Yes	Yes
Circulation control	Yes	Yes	Yes	Yes	Yes	Yes
Inter-libary loan	Yes	Yes	Yes	No	Yes	Yes
Online inquiry and public catalogue	Yes	Yes	Yes	Yes	Yes	Yes
Acquisitions management	Yes	Yes	Yes	Yes	Yes	Yes
Serials control	Yes	Yes	1990	Yes	No	Yes
Report generator	Yes	Yes	Yes	Yes	Yes	Yes

Technical Information

	CLSI	DRA	INLEX	INNOPAC/ INNOVACQ	multiLIS	VTLS
Computer	Sequent	MicroVAX	HP3000/925	No details provided	NCR Tower 32/650	HP3000/925
Operating system	UNIX	VMS	MPE XL		UNIX	MPE XL
Memory	16 Mb	16 Mb	64 Mb		24 Mb	32 Mb + 16 Mb
Disk storage	4 x 850 Mb	400 Mb	4 x 571 Mb		2 x 380 Mb	571 Mb
Terminals	T1200	VT 320	700/92		VT 220	VT 220
Printers	Not quoted	Not quoted	ThinkJet		C.ITOH	ThinkJet + IBM Proprinter
Barcode readers	Lightpen	Intermec	Make not specified		Make not specified	Make not specified
Tape drive	STC-60 + MT 6250	TK 70 296 Mb	6250 bpi		No details provided	1600 cpi 1/2"
Tele-communications	Modems + Multiplexors	Modems + Multiplexors	Not quoted		Modem	Modems

Appendix IV: Acronyms and abbreviations

AACR2	Anglo-American Cataloguing Rules, 2d. edition
BBM	Books By Mail
CATSS	CATalogue Support System (Utlas)
CD-CATSS	Compact Disc - CATSS
CD-ROM	Compact Disc - Read Only Memory
CPU	Central Processing Unit [of the computer]
DBMS	Database management system
DBW	Database walk
FBR	Full bibliograpic record
FEP	Front End Processor [handles communications to the computer]
FST	Federal sales tax
GRC	General Research Corporation
ILL	Inter-library loan
ILS	Integrated library system
ISBD	International Standard Bibliographic Description
LCF	Library Communications Format [Utlas version of MARC]
LNR	Labrador Nothern Region
MARC	MAchine Readable Cataloguing
MUN	Memorial University of Newfoundland
NLCS	Newfoundland and Labrador Computer Services
NLDC	Newfoundland and Labrador Development Corporation
NPL	Code for NPL in the Utlas CATSS file
NPLS	Newfoundland Public Library Services
OPAC	Online public access catalogue
PRRL	Provincial Reference and Resource Library
PST	Provincial sales tax
RECON	Retrospective conversion [of the catalogue]
RFP	Request for Proposal
RFQ	Request for quotation
RISC	Reduced instruction set computing
RSN	Record Sequence Number (Utlas)
SJCL	St. John's City Libraries
VDT	Video Display Terminal
YA	Young adult

Appendix Ii: NPLS Request for Quotation

REQUEST FOR QUOTATION

SYSTEM: _____

CONTACT: _____ **TITLE:** _____

TELEPHONE: _____

LIBRARY PROFILE:

Name of Library: Newfoundland Public Library Services
Address: Arts & Culture Centre,
St. John's, Newfoundland
A1B 3A3
Phone number: (709) 737-3964

Contact: Pearce J. Penney, Provincial Director

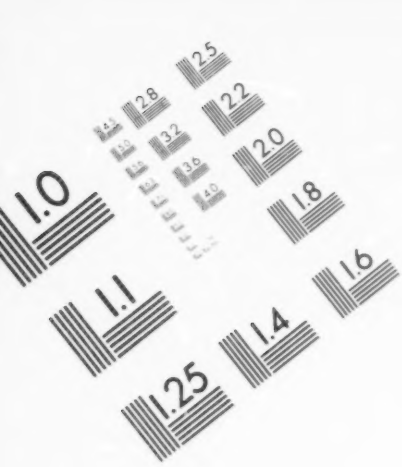
The Newfoundland Public Library Services is organized on a regional basis. The province is divided into six regions plus the St. John's City Libraries system. Each region has a regional headquarters and a designated regional resource library. The number of branch libraries in each region ranges from nine to twenty-two for a total of 109 service points.

Support services for the entire system are provided through three provincial departments: Technical Services which provides centralized cataloguing and processing of library materials, Provincial Reference and Resource Library which acts as a provincial resource collection and provides access to ILL outside the system, and Administration which includes a centralized business office responsible for payroll, accounts payable and related matters.

The Newfoundland Public Library Services and the main branch of the St. John's City Public Library, the A.C. Hunter Library, are located in the Arts & Culture Centre in St. John's. The other three branches of the St. John's City Public Library system are located within the city limits.

STATISTICAL PROFILE
Newfoundland Public Library Services

	Titles	Volumes
Monographs	200,000	1,088,779
Annual acquisitions	13,000	

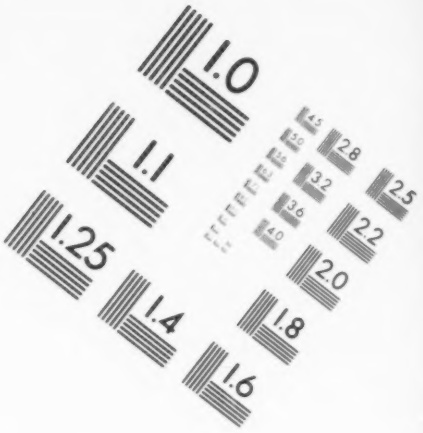


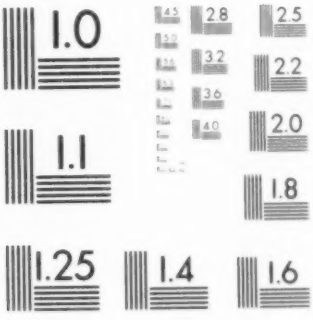
AIIM

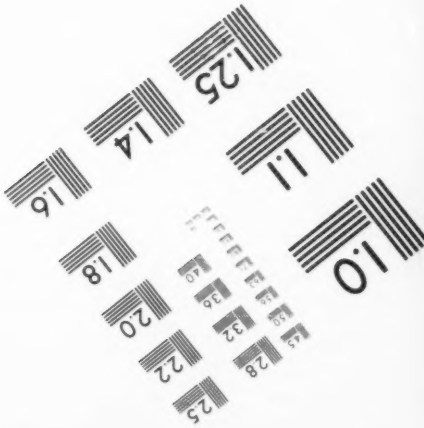
Association for Information and Image Management

1100 Wayne Avenue, Suite 1100
Silver Spring, Maryland 20910

301/587-8202







MANUFACTURED TO AIIM STANDARDS
BY APPLIED IMAGE, INC.

STATISTICAL PROFILE
St. John's City Libraries

	Titles	Volumes
Monographs	85,000(est.)	116,329
Serials (includes Provincial Reference & Resource Library)	1,000(est.)	
Sound recordings	4,149	
Annual acquisitions	4,800	

Annual circulation	1988-89	1987-88
A.C.Hunter Library	220,869	218,215
Gosling Branch	40,102	40,230
Marjorie Mews Branch	36,774	44,768
Michael Donovan	56,951	55,911
Total	354,696	359,124

Serials check-in 6000-7000(est.)

Number of patrons 13,391

MACHINE READABLE RECORDS:

Number: 108,000 on Utlas
Since when: 1981
MARC format: Utlas LCF
Recon : Selective recon in progress

FUNCTIONS REQUIRED (IN PRIORITY ORDER):	**Available**
Cataloguing	_____
- MARC format for bibliographic records	_____
- Union catalogue management	_____
Circulation control (at St. John's City + 3 branches)	_____
Inter-library loan	_____
Online inquiry and public catalogue	_____
Acquisitions management	_____
Serials control (at St. John's City + Provincial Reference & Resource Library)	_____
Report Generator	_____

HARDWARE ENVIRONMENT:

Distribution and number of terminals

Technical Services		
Acquisitions	2	
Cataloguing	4	
Processing	2	(with 2 bar code readers)
Provincial Reference and Resource Library		
OPAC	3	
Staff use/ILL	5	
Serials control	1	
St. John's City Public Libraries		
A.C. Hunter Library		
Circulation	5	(with 5 bar code readers)
Workrooms	3	(with 1 bar code readers)
OPAC	6	
Gosling Library		
Circulation	2	(with 2 bar code readers)
Workroom	1	(with 1 bar code reader)
OPAC	2	
Marjorie Mews Library		
Circulation	2	(with 2 bar code readers)
Workroom	2	(with 1 bar code reader)
OPAC	2	
Michael Donovan Library		
Circulation	2	(with 2 bar code readers)
Workroom	2	(with 1 bar code reader)
OPAC	3	
NPLS Headquarters Administration		
Management	4	

COMMUNICATIONS ENVIRONMENT:

Support for :

Regions:	4 simultaneous users
St. John's patrons:	1 additional port
St. John's City Branches	for circulation and OPAC

The main computer will be housed in the Arts & Culture building with direct connections for Technical Services, the Provincial Reference and Resource Library, the A.C. Hunter Library (main branch) of the St. John's City Public Library system and the Headquarters terminals. (All of the above are located in the Arts & Culture Centre.)

The three other branches of the St. John's City Public Library system should be connected by the most economical means. All are located within the city limits.

The Regions should have occasional dial-up access by the most economical means.

QUOTATION:

	Purchase Price	Monthly Maintenance
Hardware		
Software		
Installation		
Database load		
Documentation		
Training		
TOTAL		

Please return the completed quotation and product literature by **July 21, 1989** to:

Beaumont and Associates Inc.
111 Russell Hill Road,
Toronto, Ontario M4V 2S9

Tel: (416) 922-9364
Fax: (416) 960-6113

Thank you.

Appendix III: Summary of responses to the RFQ

The following pages contain a brief summary of the vendor information received as a result of the RFQ.